Misterio de los números primos y fórmulas generadoras

by José de Jesús Camacho Medina - Tuesday, September 17, 2013

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Introducción

El mundo en el que nos desenvolvemos esta rodeado por números, los encontramos por todos lados, son parte de nuestra vida cotidiana e inclusive nos ayudan a comunicarnos, con ellos entendemos el mundo que nos rodea como lo decía Filolao, un Filosofo Griego (h. 470 – h. 385 a. C) que afirma el papel tan importante de los Números:

> *"El número reside en todo lo que es conocido. Sin él es imposible pensar nada ni conocer nada."*

Los números están implícitos en todas las actividades que el ser Humano desarrolla, lo antes expresado desemboca en concebir una forzosa dependencia de la Matemática, los números son imprescindibles en nuestro diario vivir, particularmente en Matemática son cimiento y columna como lo afirma Gauss de origen Alemán, uno de los más grandes Matemáticos de la Historia, conocido como El Príncipe de las Matemáticas:

> *"La Matemática es la reina de las ciencias y la Teoría de Números es la reina de las Matemáticas"*.

¿Cuáles son los números más importantes en la matemática?

Los Números más importantes son los Números Primos, en consecuencia se gesta una pregunta al aire:

¿Que son los Números Primos?

Existen dos principios básicos acerca de lo que es un Número Primo:

· *Es un número Natural*

· *Sólo es divisible por el número uno y por el mismo.*

Entonces un Número Primo es aquel que sólo se puede dividir por dos números; el uno y el mismo número, es decir posee dos divisores.

Ejemplos:

Número	¿Es Primo?	Descripción
7	Sí	Tiene dos divisores: 1 y 7

9	No	Tiene tres divisores:1,3,9

La lista de los primeros 30 Números Primos es la siguiente:

2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317,331,337,347,349,353,359,367,373,379,383,389,397,401,409,419,421,431,433,439,443,449,457,461,463,467,479,487,491,499,503,509,521,523,541,547,557,563,569,571,577,587,593,599,601,607,613,617,619,631,641,643,647,653,659,661,673,677,683,691,701,709,719,727,733,739,743,751,757,761,769,773,787,797,809,811,821,823,827,829,839,853,857,859,863

¿Cuál es la importancia de estos números?

Pero hay más tela de donde cortar acerca de estos Números Indivisibles, los Números Primos son la base de las Matemáticas, sí la Matemática fuera un castillo los Números Primos serían los ladrillos. Todos los números que no son primos se pueden construir multiplicando Números Primos, por ejemplo:

33= 3*11, donde 3 y 11 son Números Primos.

100=2*2*5, DONDE 2 Y 5 SON NÚMEROS PRIMOS.

Asimilamos pues que los Números Primos son los átomos de la Matemática, son como Hidrógeno y Oxígeno en el universo de los Números, es allí donde radica su importancia.

Historia selectiva sobre números primos

Desde hace más de dos mil años, los Matemáticos se han interesado en estos fascinantes e importantes Números, en la Antigua Grecia diversos Personajes exploraron y descifraron su importancia. El Nombre de Euclides sale a la luz sin ningún límite, Euclides demostró que los Números Primos eran infinitos, concretamente probó que su naturaleza era inagotable y lo hizo a partir del razonamiento lógico.

(Ca.325 – ca. 265 a. C.)

Euclides demostró que los Números Primos son infinitos de la siguiente manera:

Primero que nada **Euclides** admitió que la lista de números primos es finita.

La lista de Números Primos: $\mathbf{P_1}$, $\mathbf{P_2}$, $\mathbf{P_3}$,… $\mathbf{P_n}$. Entonces podemos obtener otro número **Q** (mucho mayor) tal que:

$\mathbf{Q}= (\mathbf{P_1} \text{ x } \mathbf{P_2} \text{ x } \mathbf{P_3} \text{ x } \ldots \text{ x } \mathbf{P_n}) + \mathbf{1}$

Evidentemente **Q** no es divisible por ningún primo pues siempre daría como residuo **1**, luego **Q** es divisible sólo por **1** y por sí mismo, es decir, **Q** es primo.

Por otra parte **Q** es mayor que **P.** Luego **P** no es el mayor número primo. Por tanto no puede existir un número primo que sea el mayor y con esto verificamos la existencia de infinitos números primos.

Después de la enorme contribución de Euclides, surgiría una nueva pregunta:

¿Existirá un Patrón que ayude a predecir la aparición y distribución de los Números Primos en su camino al infinito?

Si nos Imaginamos a los Números Naturales (1, 2, 3, 4, 5, 6, 7,….) en Fila, da la sensación de que los Números Primos están colocados de forma aleatoria, que su comportamiento simpatiza con el azar, veamos la ilustración:

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**

Una de las misiones de todo Matemático es la búsqueda de Patrones; el construir Modelos y Ecuaciones que de alguna manera permitan interpretar y darle sentido al caos.

Es entonces cuando las mentes más brillantes de todos los tiempos se adentraron en la conquista de patrones que determinaran el comportamiento de los Números Primos, podemos destacar a Gauss y a Euler: grandes Genios Matemáticos que se preguntaban con insistencia:

¿ExistIRÁ un Orden en Los Números Primos, Cual es el patrón que siguen?

Concebir un mundo construido con un lenguaje lejano al azar era la flama que encendía la fe para todos aquellos que decidieron emprender una de los retos y proezas más difíciles en las Matemáticas, viene a mi mente una máxima de Albert Einstein (Físico Matemático Alemán, 1879 –1955):

> *"Dios no Juega a los Dados"*

Es aquí donde brota uno de los más grandes misterios de la Matemática:"El Patrón que siguen estrellas románticas: Los Números Primos", para muchos el Santo Grial de las Matemáticas, un problema que ha atormentado a todos aquellos Eruditos que se atrevieron y aún en la actualidad se atreven a desenmascarar.

Matemáticos de todas razas han osado resolver el misterioso y aún desconocido patrón con el que bailan los Números Primos, con el afán de hacer descansar a ese fantasma que los hostiga y les implora sus servicios racionales y lógicos para poder trascender, aquel que lo logre abrirá nuevos horizontes de luz en cuanto al conocimiento del universo y su nombre se inmortalizará en la Historia de la Humanidad.

¿Qué avances se han tenido en cuanto a la obtención del Patrón de los rebeldes Números Primos, de esos entes Matemáticos que parecen burlarse del orden?

Aquí es preciso y justo mencionar a Gauss, quien desarrolló el avance más significativo en cuanto a la caza del patrón de los Números Primos.

Tras fracasar en el intento de encontrar un modelo que interpretará el orden de los Números Primos, Gauss realizó un giro de ciento ochenta grados al problema y en alternativa se preguntó:

¿Cuántos Números Primos hay en un intervalo determinado? , por ejemplo ¿Cuántos Números Primos existen menores a 10, menores a 100, menores a 1000 y así sucesivamente?

Comenzó a construir tablas y tablas de números Primos y finalmente encontró un ligero patrón el cual le permitió desarrollar una fórmula que permite saber de manera aproximada cuantos primos se encontraran en cierto rango y aunque es una aproximación lo que su formula de Densidad Prima genera, Gauss abrió una ventana de luz a ese misterio.

> Otro de los Genios que abrió más ventanas de iluminación en torno al ya susodicho misterio fue: Riemann, Matemático Alemán (1826 – 1866) que fúe discípulo de Gauss, Riemann trabajaba con una función Matemática llamada Función Zeta la cual al ser llevada a un escenario matemático tridimensional mostraba una conexión con la distribución de los Números Primos, esto le llevo a la concepción de una nueva Geometría, la Función Zeta podría descifrar los secretos de estos Números, este enfoque mejoraría a exactitud el trabajo de Gauss ahora bastaría demostrar que la correspondencia de su Fórmula con los Números Primos se cumplía al infinito, hasta la fecha no se ha demostrado quedando para la posteridad la famosa "Hipótesis de Riemann", se obsequia un millón de dólares para el que la demuestre.
>
> Esta es la Función Zeta:
>
> "Hasta el día de hoy, los matemáticos han intentado en vano encontrar algún orden en la sucesión de los números primos, y tenemos motivos para creer que es un misterio en el que la mente jamás penetrará"
>
> Euler (Matemático Suizo, 1707-1783)

Hasta este momento y en base a lo descrito en la historia de los Números Primos podemos brindar una primera conclusión:

No es fácil saber si un número es primo y además no es fácil encontrar fórmulas que generen primos.

En relación a la anterior conclusión aparecen forzosamente tres preguntas base sobre la existencia de alguna fórmula para los Números primos:

- **¿Hay una función 'f' tal que f (n) = pn, es DECIR, que genere el n-ésimo primo para toda n?**
- **¿existen funciones que sólo produzcan números primos?**
- **¿Hay alguna función polinómica que produzca números primos?**

EXISTEN FÓRMULAS LAS CUÁLES PODEMOS CONSIDERAR IMPRÁCTICAS DEBIDO A SU COMPLEJIDAD COMPUTACIONAL, CONSECUENCIA DEL USO DE OPERACIONES COMO FACTORIALES O EXPONENCIACIONES.

PODEMOS CITAR POR EJEMPLO, A FÓRMULAS CONSTRUIDAS EN BASE AL **TEOREMA DE WILSON QUE DICE LO SIGUIENTE:**

El **teorema de Wilson** es un teorema relacionado con la divisibilidad y los Números Primos. Se enuncia de la siguiente manera:

Si ***p*** es un número primo, entonces (*p* ? 1)! ? -1 (mod *p*)

John Wilson

Esta fórmula de Willians del año de 1964, está basada en el Teorema de Wilson, lamentablemente la capacidad de cálculo es muy compleja por lo que resulta inviable en su utilización.

Podemos citar otra fórmula la cual hace referencia a una función Multiplicativa estudiada en Teoría de Números llamada Función Möbius:

Dicha Fórmula desarrollada por Ghandi es la siguiente:

Podemos afirmar que tanto la fórmula de Willians cómo la de Gandhi, esencialmente son las versiones de la Criba de Eratóstenes para Números Primos.

Otra fórmula que produce Números Primos es la de Mills (1947), que demostró la existencia de un número real A?1.3064 para que la siguiente función sea primorial para toda n:O

Encontramos varias funciones para generar números primos.

En 1772, Euler observó que el polinomio: generaba Números Primos para valores de n:

Para n = 40 el valor es 1681 = 412, el cual es número compuesto.

¿Existe un polinomio F(n) que sólo toma valores primos?

El polinomio constante F(n) = 41 lo es!, así como F(n) = 3, sin embargo, está demostrado que no existe polinomio constante en una variable con coeficientes enteros que produce sólo valores Primos.

Jones 1976, Sato, Wada, Wiens Wiens encontraron un polinomio de grado explícito de 25 en 26 variables:

Corolario: Si ***p*** es primo, entonces no es una prueba de que p es primoconsta de 87 adiciones y multiplicaciones.

Este polinomio es una implementación de una prueba de primalidad en el idiomade polinomios. El primer resultado de este tipo fue un polinomio de grado-37 en 24 variables construido por Yuri Matiyasevich en 1971.

En la práctica, ninguno de los “generadores” en realidad generan números primos en absoluto. Sólo están diseñados.

Sucesión de Fibonacci y los números primos

Hace aproximadamente un año que me percaté de una relación que existía entre la Sucesión del orden y la belleza: la Sucesión de Fibonacci de la cual se engendra el número áureo 1.618… y la distribución de los Números Primos.

Vamos empezando a modelar un esquema gráfico donde visualmente nos percataremos de esa misteriosa relación:

Si hacemos una lista horizontal de los elementos de la Sucesión de Fibonacci y de manera paralela los números naturales, podemos verificar que a partir del número primo 7 encontramos un patrón de la siguiente manera:

Los números Primos de la lista de los Naturales tienden a ser divisibles por los elementos de la sucesión de Fibonacci en posiciones n+1 y n-1, vemos en el gráfico el trazo de diagonales y generamos la siguiente tabla para hacer un análisis:

n	Fibonacci(n)	Naturales(n)	División

7	F(8)	7	
11	F(10)	11	
13	F(14)	13	=29
17	F(18)	17	=152
19	F(18)	19	=136
23	F(24)	23	=2016
29	F(28)	29	=10959
31	F(30)	31	=26840
…	…	…	…

Este patrón para casi 10 primos nos permite intuir que se puede cumplir al infinito, pero tenemos un pequeño inconveniente, la sucesión de Fibonacci comienza a crecer considerablemente, por lo que nuestra capacidad de cálculo nos obliga a hacer uso de un software matemático para comprobar que la tendencia se sigue produciendo en una cantidad considerable antes de formular toda conjetura, y es cuando hacemos uso de Wólfram Matemathica.

Comenzamos con la siguiente expresión producto de la intuición:

Si ***Fibonacci(n+1) Mod (n) =0 y Fibonacci (n-1) Mod (n) =0***, entonces **'n'** es un número Primo.

***Donde Mod representa el residuo de una división.**

Llevamos estas expresiones al Programa de Matemathica para evaluar a una cantidad considerable, en este caso para los primeros 500 valores de n:

Table [Mod [(GCD [Fibonacci [n+1], n]), n], {n, 1,500}]

{0,0,0,1,1,1,0,2,1,1,1,1,0,2,3,1,0,1,1,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,3,1,1,1,0,2,1,1,0,1,1,2,3,1,0,1,1,2,1,1,1,1,1,2,21,1,1,1,0,2,1,1,1,1,0,2,3,1,1,1,1,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,33,1,1,1,0,26,1,1,0,1,1,2,3,1,0,1,1,2,1,1,7,1,1,2,3,1,1,1,0,2,1,1,1,1,1,2,3,1,0,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,3,1,1,1,0,2,1,1,0,1,1,34,3,1,0,1,7,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,39,1,0,1,1,2,1,1,1,1,1,2,3,1,11,1,1,2,1,1,1,1,1,2,3,1,1,1,0,2,1,1,0,1,1,2,21,1,0,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,1,2,3,1,0,1,1,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,3,1,1,1,0,2,1,13,7,1,1,2,3,1,0,1,1,2,1,1,1,1,1,2,3,1,1,1,0,2,1,1,1,1,0,2,3,1,0,1,11,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,3,1,1,1,7,2,1,1,0,1,1,2,3,1,0,1,1,2,1,1,1,1,1,2,3,1,1,1,0,2,1,1,1,1,0,2,3,1,0,1,1,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,1,1,0,2,21,1,1,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,11,1,1,1,0,2,3,1,1,1,1,2,1,1,0,1,1,2,3,1,1,1,1,2,1,1,7,1,0,2,3,1,1,1,0,2,1,1,0,13,1,2,3,1,1,1,1,34,1,1,1,1,1,2,3,1,1,1,0,2,1,1,1,1,1,2,3,1,1,1,1,2}

Si condensamos la expresión anterior a:

Table [(GCD [Fibonacci [n+1], n]), {n, 1,500}] obtenemos:

***Donde GCD Es el máximo común divisor**

{1,2,3,1,1,1,7,2,1,1,1,1,13,2,3,1,17,1,1,2,1,1,23,1,1,2,3,1,1,1,1,2,1,1,1,1,37,2,3,1,1,1,43,2,1,1,47,1,1,2,3,1,53,1,1,2,1,1,1,1,1,2,21,1,1,1,67,2,1,1,1,1,73,2,3,1,1,1,1,2,1,1,83,1,1,2,3,1,1,1,1,2,1,1,1,1,97,2,33,1,1,1,103,26,1,1,107,1,1,2,

3,1,113,1,1,2,1,1,7,1,1,2,3,1,1,1,127,2,1,1,1,1,1,2,3,1,137,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,157,2,3,1,1,1,163,2,1,
1,167,1,1,34,3,1,173,1,7,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,193,2,39,1,197,1,1,2,1,1,1,1,1,2,3,1,11,1,1,2,1,1,1,1,1,2,3,
1,1,1,223,2,1,1,227,1,1,2,21,1,233,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,1,2,3,1,257,1,1,2,1,1,263,1,1,2,3,1,1,1,1,2,1,
1,1,1,277,2,3,1,1,1,283,2,1,13,7,1,1,2,3,1,293,1,1,2,1,1,1,1,1,2,3,1,1,1,307,2,1,1,1,1,313,2,3,1,317,1,11,2,1,1,323,1,
1,2,3,1,1,1,1,2,1,1,1,1,337,2,3,1,1,1,7,2,1,1,347,1,1,2,3,1,353,1,1,2,1,1,1,1,1,2,3,1,1,1,367,2,1,1,1,1,373,2,3,1,377,1
,1,2,1,1,383,1,1,2,3,1,1,1,1,2,1,1,1,1,397,2,21,1,1,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,1,1,1,1,1,2,3,1,1,1,1,2,11,1,1,1,433,2,
3,1,1,1,1,2,1,1,443,1,1,2,3,1,1,1,1,2,1,1,7,1,457,2,3,1,1,1,463,2,1,1,467,13,1,2,3,1,1,1,1,34,1,1,1,1,1,2,3,1,1,1,487,2
,1,1,1,1,1,2,3,1,1,1,1,2}

Encontramos el primer contraejemplo para nuestra intuición, para el caso **n=323**, **el cual no es un número primo,** después observamos que la sucesión vuelve a retomar el patrón.

Luego para:

Table [Mod [(GCD [Fibonacci [n-1], n]), n], {n, 1,500}]

{0,1,1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,1,0,1,3,2,1,1,1,1,1,2,0,1,0,1,3,2,1,1,1,1,1,2,0,1,1,1,3,2,1,1,7,1,1,2,1,1,1,1,3,2,0,1,0,
1,1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,13,0,1,3,2,1,1,1,1,1,2,0,1,1,1,3,2,1,1,1,1,1,2,0,1,1,1,21,2,1,1,0,1,1,2,1,1,1,1,3,2,1,1,11
,1,1,2,1,1,1,1,3,2,0,1,1,1,1,34,1,1,0,1,3,2,1,1,1,1,1,2,0,1,0,1,3,2,1,1,1,1,1,2,7,1,1,1,3,2,1,1,13,1,1,2,1,1,1,1,3,2,0,1,0,
1,1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,1,0,1,3,2,1,1,1,1,1,2,1,1,0,1,3,2,1,1,7,1,1,2,1,1,1,1,3,2,1,1,0,1,11,2,1,1,1,1,3,2,0,1,0,1,
1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,1,1,13,3,2,1,1,1,1,1,2,0,1,0,1,21,2,1,1,1,1,1,2,0,1,1,1,3,2,1,1,17,1,1,2,1,1,1,1,3,2,1,1,1,1
,1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,1,1,1,3,2,1,1,1,1,1,2,7,1,0,1,3,2,1,1,1,1,1,2,11,1,1,1,3,2,1,1,0,1,13,2,1,1,1,1,3,2,0,1,19,
1,1,2,1,1,1,1,3,2,1,1,1,1,1,2,1,1,0,1,3,2,1,1,7,1,1,2,0,1,1,1,3,2,1,1,1,1,1,2,0,1,1,1,3,2,1,1,0,1,1,2,1,1,1,1,3,2,0,1,0,1,1
,2,1,1,1,1,3,2,0,1,1,1,29,2,1,1,0,1,21,0,1,1,1,1,1,2,0,1,11,1,3,2,1,1,
1,1,1,2,0,1,1,1,3,2,1,1,1,1,1,2,1,1,1,1,3,2,0,1,1,1,1,2,1,1,1,1,3,2,0,1,1,1,1,2,7,1,0,1}

Si condensamos la expresión anterior a:

Table [GCD [Fibonacci [n-1], n], {n, 1,500}]

Donde GCD Es el máximo común divisor

{1,1,1,2,1,1,1,1,3,2,11,1,1,1,1,2,1,1,19,1,3,2,1,1,1,1,1,2,29,1,31,1,3,2,1,1,1,1,1,2,41,1,1,1,3,2,1,1,7,1,1,2,1,1,1,1,3,2
,59,1,61,1,1,2,1,1,1,1,3,2,71,1,1,1,1,2,1,13,79,1,3,2,1,1,1,1,1,2,89,1,1,1,3,2,1,1,1,1,1,2,101,1,1,1,21,2,1,1,109,1,1,2,
1,1,1,1,3,2,1,1,11,1,1,2,1,1,1,1,3,2,131,1,1,1,1,34,1,1,139,1,3,2,1,1,1,1,1,2,149,1,151,1,3,2,1,1,1,1,1,2,7,1,1,1,3,2,1,
1,13,1,1,2,1,1,1,1,3,2,179,1,181,1,1,2,1,1,1,1,3,2,191,1,1,1,1,2,1,1,199,1,3,2,1,1,1,1,1,2,1,1,211,1,3,2,1,1,7,1,1,2,1,
1,1,1,3,2,1,1,229,1,11,2,1,1,1,1,3,2,239,1,241,1,1,2,1,1,1,1,3,2,251,1,1,1,1,2,1,1,1,13,3,2,1,1,1,1,1,2,269,1,271,1,21
,2,1,1,1,1,1,2,281,1,1,1,3,2,1,1,17,1,1,2,1,1,1,1,3,2,1,1,1,1,1,2,1,1,1,1,3,2,311,1,1,1,1,2,1,1,1,1,3,2,1,1,1,1,1,2,7,1,3
31,1,3,2,1,1,1,1,1,2,11,1,1,1,3,2,1,1,349,1,13,2,1,1,1,1,3,2,359,1,19,1,1,2,1,1,1,1,3,2,1,1,1,1,1,2,1,1,379,1,3,2,1,1,7,
1,1,2,389,1,1,1,3,2,1,1,1,1,1,2,401,1,1,1,3,2,1,1,409,1,1,2,1,1,1,1,3,2,419,1,421,1,1,2,1,1,1,1,3,2,431,1,1,1,29,2,1,1,
439,1,21,442,1,1,1,1,1,2,449,1,11,1,3,2,1,1,1,1,1,2,461,1,1,1,3,2,1,1,1,1,1,2,1,1,1,1,3,2,479,1,1,1,1,2,1,1,1,1,3,2,49
1,1,1,1,1,2,7,1,499,1}

Encontramos el primer contraejemplo para esta expresión, en el caso **n=442**, **el cual no es un número primo,** después observamos que la sucesión vuelve a retomar el patrón ó la tendencia antes afirmada.

No todo está perdido, si bien el patrón se rompe con un par de contraejemplos, nuestro modelo gráfico bautizado como la Criba de Fibonacci podría encontrar sin problema los primeros 66 números primos:

{2,3,5,

7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317…}

Al observar que el patrón vuelve a recobrar sentido, podemos sacar provecho de este partido y generar fórmulas que produzcan una cantidad de números primos considerables, ese será nuestro punto de partida en este momento, nos fijamos una primer meta: **Conseguir una expresión matemática que genere por lo menos a los primeros 100 números primos** haciendo uso del patrón observado de la sucesión de Fibonacci.

Al seguir trabajando en Wolfram Matemathica con las tendencias antes encontradas para 700 valores de la variable 'n' y además de ir condicionando las fórmulas debido a contraejemplos y parásitos encontrados, llegamos a las siguientes expresiones donde se incluyen residuos, funciones piso y funciones techo:

La fórmula A genera:

{1,2,3,0,0,0,7,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,23,0,0,0,0,0,0,0,0,0,0,0,0,0,37,0,0,0,0,0,43,0,0,0,47,0,0,0,0,0,53,0,0,0,0,0
,0,0,0,0,0,0,0,0,67,0,0,0,0,0,73,0,0,0,0,0,0,0,0,0,83,0,0,0,0,0,0,0,0,0,0,0,0,0,97,0,0,0,0,0,103,0,0,0,107,0,0,0,0,0,113
,0,0,0,0,0,0,0,0,0,0,0,0,0,127,0,0,0,0,0,0,0,0,0,137,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,157,0,0,0,0,0,163,0,0,0,167,0
,0,0,0,0,173,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,193,0,0,0,197,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,223,0,
0,0,227,0,0,0,0,0,233,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,257,0,0,0,0,0,263,0,0,0,0,0,0,0,0,0,0,0,0,0,277,0,0,
0,0,0,283,0,0,0,0,0,0,0,0,0,293,0,0,0,0,0,0,0,0,0,0,0,0,0,307,0,0,0,0,0,313,0,0,0,317,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,337,0,0,0,0,0,0,0,0,0,347,0,0,0,0,0,353,0,0,0,0,0,0,0,0,0,0,0,0,0,367,0,0,0,0,0,373,0,0,0,0,0,0,0,0,0,383,0,0,0,0,0
,0,0,0,0,0,0,0,0,397,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,433,0,0,0,0,0,0,0,0,0,443,0,0,
0,0,0,0,0,0,0,0,0,0,0,457,0,0,0,0,0,463,0,0,0,467,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,487,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,503,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,523,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,547,0,0,0,0,0,0,0,0,0,557,
0,0,0,0,0,563,0,0,0,0,0,0,0,0,0,0,0,0,0,577,0,0,0,0,0,0,0,0,0,587,0,0,0,0,0,593,0,0,0,0,0,0,0,0,0,0,0,0,0,607,0,0,0,0,0,
613,0,0,0,617,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,643,0,0,0,647,0,0,0,0,0,653,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,673,0,0,0,677,0,0,0,0,0,683,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

La fórmula B genera:

{1,0,0,0,0,0,0,0,0,0,11,0,0,0,0,0,0,0,19,0,0,0,0,0,0,0,0,0,29,0,0,0,0,0,0,0,0,0,0,0,41,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
59,0,61,0,0,0,0,0,0,0,0,0,71,0,0,0,0,0,0,0,79,0,0,0,0,0,0,0,0,0,89,0,0,0,0,0,0,0,0,0,0,0,101,0,0,0,0,0,0,0,109,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,131,0,0,0,0,0,0,0,139,0,0,0,0,0,0,0,0,0,149,0,151,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,179,0,181,0,0,0,0,0,0,0,0,0,191,0,0,0,0,0,0,0,199,0,0,0,0,0,0,0,0,0,0,0,211,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,229,0,0,0,0,0,0,0,0,0,239,0,241,0,0,0,0,0,0,0,0,0,251,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,269,0,271,0,0,0,0,0,0,0,0
,0,281,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,311,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,331,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,349,0,0,0,0,0,0,0,0,0,359,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,379,0,0,0,0,0,0,0,0,0,389,0,0,0,
0,0,0,0,0,0,0,0,401,0,0,0,0,0,0,0,409,0,0,0,0,0,0,0,0,0,419,0,421,0,0,0,0,0,0,0,0,0,431,0,0,0,0,0,0,0,439,0,0,0,0,0,0,0
,0,0,449,0,0,0,0,0,0,0,0,0,0,0,461,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,479,0,0,0,0,0,0,0,0,0,0,0,491,0,0,0,0,0,0,0,499,0,0
,0,0,0,0,0,0,0,509,0,0,0,0,0,0,0,0,0,0,0,521,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,541,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,569,0,571,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,599,0,601,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,619,0,0,0,0,0,0,0,0,0,0,0,631,0,0,0,0,0,0,0,0,0,641,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,659,0,661,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,691,0,0,0,0,0,0,0,0,0}

La fórmula C genera:

{0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

La fórmula D genera:

{0,0,2,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

La fórmula E genera:

{0,0,0,0,0,0,0,0,0,0,0,0,0,13,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

La fórmula F genera:

{0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,17,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0

,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

La fórmula G genera:

{0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,31,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

AHORA SUMAMOS CADA UNA DE LAS FÓRMULAS:

PRIMOS=A+B+C+D+E+F+G

Y OBTENEMOS:

{2,3,5,0,0,0,7,0,0,0,11,0,13,0,0,0,17,0,19,0,0,0,23,0,0,0,0,0,29,0,31,0,0,0,0,0,37,0,0,0,41,0,43,0,0,0,47,0,0,0,0,0,53,
0,0,0,0,0,59,0,61,0,0,0,0,0,67,0,0,0,71,0,73,0,0,0,0,0,79,0,0,0,83,0,0,0,0,0,89,0,0,0,0,0,0,0,97,0,0,0,101,0,103,0,0,0,
107,0,109,0,0,0,113,0,0,0,0,0,0,0,0,0,0,0,0,0,127,0,0,0,131,0,0,0,0,0,137,0,139,0,0,0,0,0,0,0,0,0,149,0,151,0,0,0,0,0
,157,0,0,0,0,0,163,0,0,0,167,0,0,0,0,0,173,0,0,0,0,0,179,0,181,0,0,0,0,0,0,0,0,0,191,0,193,0,0,0,197,0,199,0,0,0,0,0,
0,0,0,0,0,0,211,0,0,0,0,0,0,0,0,0,0,0,223,0,0,0,227,0,229,0,0,0,233,0,0,0,0,0,239,0,241,0,0,0,0,0,0,0,0,0,251,0,0,0,0,
0,257,0,0,0,0,0,263,0,0,0,0,0,269,0,271,0,0,0,0,0,277,0,0,0,281,0,283,0,0,0,0,0,0,0,0,0,293,0,0,0,0,0,0,0,0,0,0,0,0,0,
307,0,0,0,311,0,313,0,0,0,317,0,0,0,0,0,0,0,0,0,0,0,0,0,331,0,0,0,0,0,337,0,0,0,0,0,0,0,0,0,347,0,349,0,0,0,353,0,0,0
,0,0,359,0,0,0,0,0,0,0,367,0,0,0,0,0,373,0,0,0,0,0,379,0,0,0,383,0,0,0,0,0,389,0,0,0,0,0,0,0,397,0,0,0,401,0,0,0,0,0,0
,0,409,0,0,0,0,0,0,0,0,0,419,0,421,0,0,0,0,0,0,0,0,0,431,0,433,0,0,0,0,0,439,0,0,0,443,0,0,0,0,0,449,0,0,0,0,0,0,0,45
7,0,0,0,461,0,463,0,0,0,467,0,0,0,0,0,0,0,0,0,0,0,479,0,0,0,0,0,0,0,487,0,0,0,491,0,0,0,0,0,0,0,499,0,0,0,503,0,0,0,0,
0,509,0,0,0,0,0,0,0,0,0,0,0,521,0,523,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,541,0,0,0,0,0,547,0,0,0,0,0,0,0,0,0,557,0,0,0,0
,0,563,0,0,0,0,0,569,0,571,0,0,0,0,0,577,0,0,0,0,0,0,0,0,0,587,0,0,0,0,0,593,0,0,0,0,0,599,0,601,0,0,0,0,0,607,0,0,0,
0,0,613,0,0,0,617,0,619,0,0,0,0,0,0,0,0,0,0,0,631,0,0,0,0,0,0,0,0,0,641,0,643,0,0,0,647,0,0,0,0,0,653,0,0,0,0,0,659,0
,661,0,0,0,0,0,0,0,0,0,0,0,673,0,0,0,677,0,0,0,0,0,683,0,0,0,0,0,0,0,691,0,0,0,0,0,0,0,0,0}

QUE CORRESPONDEN A LOS PRIMEROS 125 NÚMEROS PRIMOS.

SI APLICAMOS EN WOLFRAM MATEMATHICA A LA FÓRMULA 'PRIMOS' LA FUNCIÓN DELETECASES PARA SUPRIMIR LOS CEROS Y SÓLO DEJAR LAS ENTIDADES PRIMALES, NOS QUEDA:

PRIMOS=A+B+C+D+E+F+G

DeleteCases [PRIMOS, 0]

{2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317,331,337,347,349,353,359,367,373,379,383,389,397,401,409,419,421,431,433,439,443,449,457,461,463,467,479,487,491,499,503,509,521,523,541,547,557,563,569,571,577,587,593,599,601,607,613,617,619,631,641,643,647,653,659,661,673,677,683,691}

NUESTRA FÓRMULA **PRIMOS=A+B+C+D+E+F+G GENERA LOS PRIMEROS 125 NÚMEROS PRIMOS**

PONGO A CONTINUACIÓN EL CÓDIGO EMPLEADO EN WOLFRAM MATEMATHICA PARA GENERAR TODOS ESTOS CÁLCULOS:

a=Table[((Ceiling[Mod[((Ceiling[Mod[((Floor[(((Mod[(GCD[(Fibonacci[n+1]),n]) ,n+1]))/n)])*n),13]/n]*n)),17]/n])*n) ,{n,1,700}]

b=Table[((Ceiling[Mod[((Ceiling[Mod[((Ceiling[Mod[(Floor[(((Mod[(GCD[(Fibonacci[n-1]),n]) ,n+1]))/n)])*n ,2]/n])*n),7]/n])*n),31]/n])*n) ,{n,1,700}]

c=Table[Floor[(Mod [(2^(2-(((n)-700*Floor[((n-1)/700)])))) ,2])] ,{n,1,700}]

d=Table[Floor[(Mod [(2^(3-(((n)-700*Floor[((n-1)/700)])))) ,2])]*2 ,{n,1,700}]

e=Table[Floor[(Mod [(2^(13-(((n)-700*Floor[((n-1)/700)])))) ,2])]*13 ,{n,1,700}]

f=Table[Floor[(Mod [(2^(17-(((n)-700*Floor[((n-1)/700)])))) ,2])] *17 ,{n,1,700}]

g=Table[Floor[(Mod [(2^(31-(((n)-700*Floor[((n-1)/700)])))) ,2])] *31 ,{n,1,700}]

CALCULO=a+b+c+d+e+f+g

DeleteCases [CALCULO, 0]

Ahora imaginemos aplicarle a otras expresiones matemáticas sobre números primos históricamente conocidas, algunos principios manifestados en este artículo y podríamos obtener expresiones que generen mayor cantidad de primos.

Comenzamos con el Teorema de Wilson:

Lo expresamos de la siguiente manera:

*Donde GCD es máximo común divisor

Y obtenemos para los primeros 1000 valores de n:

{1,2,3,0,5,0,7,0,0,0,11,0,13,0,0,0,17,0,19,0,0,0,23,0,0,0,0,0,29,0,31,0,0,0,0,0,37,0,0,0,41,0,43,0,0,0,47,0,0,0,0,0,53,0,0,0,0,0,59,0,61,0,0,0,0,0,67,0,0,0,71,0,73,0,0,0,0,0,79,0,0,0,83,0,0,0,0,0,89,0,0,0,0,0,0,0,97,0,0,0,101,0,103,0,0,0,107,0,109,0,0,0,113,0,0,0,0,0,0,0,0,0,0,0,0,0,127,0,0,0,131,0,0,0,0,0,137,0,139,0,0,0,0,0,0,0,0,0,149,0,151,0,0,0,0,0

,157,0,0,0,0,0,163,0,0,0,167,0,0,0,0,0,173,0,0,0,0,0,179,0,181,0,0,0,0,0,0,0,0,0,191,0,193,0,0,0,197,0,199,0,0,0,0,0,0,0,0,0,0,0,211,0,0,0,0,0,0,0,0,0,0,0,223,0,0,0,227,0,229,0,0,0,233,0,0,0,0,0,239,0,241,0,0,0,0,0,0,0,0,0,251,0,0,0,0,0,257,0,0,0,0,0,263,0,0,0,0,0,269,0,271,0,0,0,0,0,277,0,0,0,281,0,283,0,0,0,0,0,0,0,0,0,293,0,0,0,0,0,0,0,0,0,0,0,0,0,307,0,0,0,311,0,313,0,0,0,317,0,0,0,0,0,0,0,0,0,0,0,0,0,331,0,0,0,0,0,337,0,0,0,0,0,0,0,0,0,347,0,349,0,0,0,353,0,0,0,0,0,359,0,0,0,0,0,0,0,367,0,0,0,0,0,373,0,0,0,0,0,379,0,0,0,383,0,0,0,0,0,389,0,0,0,0,0,0,0,397,0,0,0,401,0,0,0,0,0,0,0,409,0,0,0,0,0,0,0,0,0,419,0,421,0,0,0,0,0,0,0,0,0,431,0,433,0,0,0,0,0,439,0,0,0,443,0,0,0,0,0,449,0,0,0,0,0,0,0,457,0,0,0,461,0,463,0,0,0,467,0,0,0,0,0,0,0,0,0,0,0,479,0,0,0,0,0,0,0,487,0,0,0,491,0,0,0,0,0,0,0,499,0,0,0,503,0,0,0,0,0,509,0,0,0,0,0,0,0,0,0,0,0,521,0,523,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,541,0,0,0,0,0,547,0,0,0,0,0,0,0,0,0,557,0,0,0,0,0,563,0,0,0,0,0,569,0,571,0,0,0,0,0,577,0,0,0,0,0,0,0,0,0,587,0,0,0,0,0,593,0,0,0,0,0,599,0,601,0,0,0,0,0,607,0,0,0,0,0,613,0,0,0,617,0,619,0,0,0,0,0,0,0,0,0,0,0,631,0,0,0,0,0,0,0,0,0,641,0,643,0,0,0,647,0,0,0,0,0,653,0,0,0,0,0,659,0,661,0,0,0,0,0,0,0,0,0,0,0,673,0,0,0,677,0,0,0,0,0,683,0,0,0,0,0,0,0,691,0,0,0,0,0,0,0,0,0,701,0,0,0,0,0,0,0,709,0,0,0,0,0,0,0,0,0,719,0,0,0,0,0,0,0,727,0,0,0,0,0,733,0,0,0,0,0,739,0,0,0,743,0,0,0,0,0,0,0,751,0,0,0,0,0,757,0,0,0,761,0,0,0,0,0,0,0,769,0,0,0,773,0,0,0,0,0,0,0,0,0,0,0,0,0,787,0,0,0,0,0,0,0,0,0,797,0,0,0,0,0,0,0,0,0,0,0,809,0,811,0,0,0,0,0,0,0,0,0,821,0,823,0,0,0,827,0,829,0,0,0,0,0,0,0,0,0,839,0,0,0,0,0,0,0,0,0,0,0,0,0,853,0,0,0,857,0,859,0,0,0,863,0,0,0,0,0,0,0,0,0,0,0,0,0,877,0,0,0,881,0,883,0,0,0,887,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,907,0,0,0,911,0,0,0,0,0,0,0,919,0,0,0,0,0,0,0,0,0,929,0,0,0,0,0,0,0,937,0,0,0,941,0,0,0,0,0,947,0,0,0,0,0,953,0,0,0,0,0,0,0,0,0,0,0,0,0,967,0,0,0,971,0,0,0,0,0,977,0,0,0,0,0,983,0,0,0,0,0,0,0,991,0,0,0,0,0,997,0,0,0}

Suprimimos los ceros:

DeleteCases [w, 0]

{1,2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317,331,337,347,349,353,359,367,373,379,383,389,397,401,409,419,421,431,433,439,443,449,457,461,463,467,479,487,491,499,503,509,521,523,541,547,557,563,569,571,577,587,593,599,601,607,613,617,619,631,641,643,647,653,659,661,673,677,683,691,701,709,719,727,733,739,743,751,757,761,769,773,787,797,809,811,821,823,827,829,839,853,857,859,863,877,881,883,887,907,911,919,929,937,941,947,953,967,971,977,983,991,997}

Puros Números Primos excepto el 1. La desventaja de está fórmula sería el uso de factorial, la cual hasta cierto punto la haría inviable sino se cuenta con un cómputo de gran capacidad.

Ahora con la Hipótesis China:

La Conjetura China dice que un número 'n' es Primo sí:

Produce a un Entero

El código de Wolfram sería:

NUEVA=Table[(Ceiling[Mod[(Ceiling[(Mod[((Floor[(((Mod[(GCD[((2^n)-2),n]) ,n+1]))/n)])*n) , 11] /n)]*n),5]/n])*n,{n,2,1381}]

NUEVA2=Table[Floor[(Mod [(2^(11-(((n)-1381*Floor[((n-1)/1381)])))) ,2])]*11 ,{n,2,1381}]

NUEVA3=Table[Floor[(Mod [(2^(5-(((n)-1381*Floor[((n-1)/1381)])))) ,2])]*5 ,{n,2,1381}]

NUEVA+NUEVA2+NUEVA3

EL RESULTADO:

NUEVA=

{2,3,0,0,0,7,0,0,0,0,0,13,0,0,0,17,0,19,0,0,0,23,0,0,0,0,0,29,0,31,0,0,0,0,0,37,0,0,0,41,0,43,0,0,0,47,0,0,0,0,0,53,0,0
,0,0,0,59,0,61,0,0,0,0,0,67,0,0,0,71,0,73,0,0,0,0,0,79,0,0,0,83,0,0,0,0,0,89,0,0,0,0,0,0,0,97,0,0,0,101,0,103,0,0,0,10
7,0,109,0,0,0,113,0,0,0,0,0,0,0,0,0,0,0,0,0,127,0,0,0,131,0,0,0,0,0,137,0,139,0,0,0,0,0,0,0,0,0,149,0,151,0,0,0,0,0,1
57,0,0,0,0,0,163,0,0,0,167,0,0,0,0,0,173,0,0,0,0,0,179,0,181,0,0,0,0,0,0,0,0,0,191,0,193,0,0,0,197,0,199,0,0,0,0,0,0,
0,0,0,0,0,211,0,0,0,0,0,0,0,0,0,0,0,223,0,0,0,227,0,229,0,0,0,233,0,0,0,0,0,239,0,241,0,0,0,0,0,0,0,0,0,251,0,0,0,0,0,
257,0,0,0,0,0,263,0,0,0,0,0,269,0,271,0,0,0,0,0,277,0,0,0,281,0,283,0,0,0,0,0,0,0,0,0,293,0,0,0,0,0,0,0,0,0,0,0,0,0,3
07,0,0,0,311,0,313,0,0,0,317,0,0,0,0,0,0,0,0,0,0,0,0,0,331,0,0,0,0,0,337,0,0,0,0,0,0,0,0,0,347,0,349,0,0,0,353,0,0,0,
0,0,359,0,0,0,0,0,0,0,367,0,0,0,0,0,373,0,0,0,0,0,379,0,0,0,383,0,0,0,0,0,389,0,0,0,0,0,0,0,397,0,0,0,401,0,0,0,0,0,0,
0,409,0,0,0,0,0,0,0,0,0,419,0,421,0,0,0,0,0,0,0,0,0,431,0,433,0,0,0,0,0,439,0,0,0,443,0,0,0,0,0,449,0,0,0,0,0,0,0,457
,0,0,0,461,0,463,0,0,0,467,0,0,0,0,0,0,0,0,0,0,0,479,0,0,0,0,0,0,0,487,0,0,0,491,0,0,0,0,0,0,0,499,0,0,0,503,0,0,0,0,0
,509,0,0,0,0,0,0,0,0,0,0,0,521,0,523,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,541,0,0,0,0,0,547,0,0,0,0,0,0,0,0,0,557,0,0,0,0,
0,563,0,0,0,0,0,569,0,571,0,0,0,0,0,577,0,0,0,0,0,0,0,0,0,587,0,0,0,0,0,593,0,0,0,0,0,599,0,601,0,0,0,0,0,607,0,0,0,0
,0,613,0,0,0,617,0,619,0,0,0,0,0,0,0,0,0,0,0,631,0,0,0,0,0,0,0,0,0,641,0,643,0,0,0,647,0,0,0,0,0,653,0,0,0,0,0,659,0,
661,0,0,0,0,0,0,0,0,0,0,0,673,0,0,0,677,0,0,0,0,0,683,0,0,0,0,0,0,0,691,0,0,0,0,0,0,0,0,0,701,0,0,0,0,0,0,0,709,0,0,0,
0,0,0,0,0,0,719,0,0,0,0,0,0,0,727,0,0,0,0,0,733,0,0,0,0,0,739,0,0,0,743,0,0,0,0,0,0,0,751,0,0,0,0,0,757,0,0,0,761,0,0,
0,0,0,0,0,769,0,0,0,773,0,0,0,0,0,0,0,0,0,0,0,0,0,787,0,0,0,0,0,0,0,0,0,797,0,0,0,0,0,0,0,0,0,0,0,809,0,811,0,0,0,0,0,0
,0,0,0,821,0,823,0,0,0,827,0,829,0,0,0,0,0,0,0,0,0,839,0,0,0,0,0,0,0,0,0,0,0,0,0,853,0,0,0,857,0,859,0,0,0,863,0,0,0,
0,0,0,0,0,0,0,0,0,0,877,0,0,0,881,0,883,0,0,0,887,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,907,0,0,0,911,0,0,0,0,0,0,0,91
9,0,0,0,0,0,0,0,0,0,929,0,0,0,0,0,0,0,937,0,0,0,941,0,0,0,0,0,947,0,0,0,0,0,953,0,0,0,0,0,0,0,0,0,0,0,0,0,967,0,0,0,97
1,0,0,0,0,0,977,0,0,0,0,0,983,0,0,0,0,0,0,0,991,0,0,0,0,0,997,0,0,0,0,0,0,0,0,0,0,0,1009,0,0,0,1013,0,0,0,0,0,1019,0,
1021,0,0,0,0,0,0,0,0,0,1031,0,1033,0,0,0,0,0,1039,0,0,0,0,0,0,0,0,0,1049,0,1051,0,0,0,0,0,0,0,0,0,1061,0,1063,0,0,0
,0,0,1069,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1087,0,0,0,1091,0,1093,0,0,0,1097,0,0,0,0,0,1103,0,0,0,0,0,1109,0,0,0,0,
0,0,0,1117,0,0,0,0,0,1123,0,0,0,0,0,1129,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1151,0,1153,0,0,0,0,0,0,0,0,0,1163
,0,0,0,0,0,0,0,1171,0,0,0,0,0,0,0,0,0,1181,0,0,0,0,0,1187,0,0,0,0,0,1193,0,0,0,0,0,0,0,1201,0,0,0,0,0,0,0,0,0,0,0,121
3,0,0,0,1217,0,0,0,0,0,1223,0,0,0,0,0,1229,0,1231,0,0,0,0,0,1237,0,0,0,0,0,0,0,0,0,0,0,1249,0,0,0,0,0,0,0,0,0,1259,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1277,0,1279,0,0,0,1283,0,0,0,0,0,1289,0,1291,0,0,0,0,0,1297,0,0,0,1301,0,1303,0,0,
0,1307,0,0,0,0,0,0,0,0,0,0,0,1319,0,1321,0,0,0,0,0,1327,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,1361,0,0,0,0,0,1367,0,0,0,0,0,1373,0,0,0,0,0,0,0,1381}

NUEVA2=

{0,0,0,0,0,0,0,0,0,11,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

NUEVA3=

{0,0,0,5,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0}

El resultado final:

{2,3,0,5,0,7,0,0,0,11,0,13,0,0,0,17,0,19,0,0,0,23,0,0,0,0,0,29,0,31,0,0,0,0,0,37,0,0,0,41,0,43,0,0,0,47,0,0,0,0,0,53,0,
0,0,0,0,59,0,61,0,0,0,0,0,67,0,0,0,71,0,73,0,0,0,0,0,79,0,0,0,83,0,0,0,0,0,89,0,0,0,0,0,0,0,97,0,0,0,101,0,103,0,0,0,1
07,0,109,0,0,0,113,0,0,0,0,0,0,0,0,0,0,0,0,0,127,0,0,0,131,0,0,0,0,0,137,0,139,0,0,0,0,0,0,0,0,0,149,0,151,0,0,0,0,0,
157,0,0,0,0,0,163,0,0,0,167,0,0,0,0,0,173,0,0,0,0,0,179,0,181,0,0,0,0,0,0,0,0,0,191,0,193,0,0,0,197,0,199,0,0,0,0,0,
0,0,0,0,0,0,211,0,0,0,0,0,0,0,0,0,0,0,223,0,0,0,227,0,229,0,0,0,233,0,0,0,0,0,239,0,241,0,0,0,0,0,0,0,0,0,251,0,0,0,0,
0,257,0,0,0,0,0,263,0,0,0,0,0,269,0,271,0,0,0,0,0,277,0,0,0,281,0,283,0,0,0,0,0,0,0,0,0,293,0,0,0,0,0,0,0,0,0,0,0,0,0,
307,0,0,0,311,0,313,0,0,0,317,0,0,0,0,0,0,0,0,0,0,0,0,0,331,0,0,0,0,0,337,0,0,0,0,0,0,0,0,0,347,0,349,0,0,0,353,0,0,0
,0,0,359,0,0,0,0,0,0,0,367,0,0,0,0,0,373,0,0,0,0,0,379,0,0,0,383,0,0,0,0,0,389,0,0,0,0,0,0,0,397,0,0,0,401,0,0,0,0,0,0
,0,409,0,0,0,0,0,0,0,0,0,419,0,421,0,0,0,0,0,0,0,0,0,431,0,433,0,0,0,0,0,439,0,0,0,443,0,0,0,0,0,449,0,0,0,0,0,0,0,45
7,0,0,0,461,0,463,0,0,0,467,0,0,0,0,0,0,0,0,0,0,0,479,0,0,0,0,0,0,0,487,0,0,0,491,0,0,0,0,0,0,0,499,0,0,0,503,0,0,0,0,
0,509,0,0,0,0,0,0,0,0,0,0,0,521,0,523,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,541,0,0,0,0,0,547,0,0,0,0,0,0,0,0,0,557,0,0,0,0
,0,563,0,0,0,0,0,569,0,571,0,0,0,0,0,577,0,0,0,0,0,0,0,0,0,587,0,0,0,0,0,593,0,0,0,0,0,599,0,601,0,0,0,0,0,607,0,0,0,
0,0,613,0,0,0,617,0,619,0,0,0,0,0,0,0,0,0,0,0,631,0,0,0,0,0,0,0,0,0,641,0,643,0,0,0,647,0,0,0,0,0,653,0,0,0,0,0,659,0

,661,0,0,0,0,0,0,0,0,0,0,0,673,0,0,0,677,0,0,0,0,0,683,0,0,0,0,0,0,0,691,0,0,0,0,0,0,0,0,0,701,0,0,0,0,0,0,0,709,0,0,0,0,0,0,0,0,0,719,0,0,0,0,0,0,0,727,0,0,0,0,0,733,0,0,0,0,0,739,0,0,0,743,0,0,0,0,0,0,0,751,0,0,0,0,0,757,0,0,0,761,0,0,0,0,0,0,0,769,0,0,0,773,0,0,0,0,0,0,0,0,0,0,0,0,0,787,0,0,0,0,0,0,0,0,0,797,0,0,0,0,0,0,0,0,0,0,0,809,0,811,0,0,0,0,0,0,0,0,0,821,0,823,0,0,0,827,0,829,0,0,0,0,0,0,0,0,0,839,0,0,0,0,0,0,0,0,0,0,0,0,0,853,0,0,0,857,0,859,0,0,0,863,0,0,0,0,0,0,0,0,0,0,0,0,0,877,0,0,0,881,0,883,0,0,0,887,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,907,0,0,0,911,0,0,0,0,0,0,0,919,0,0,0,0,0,0,0,0,0,929,0,0,0,0,0,0,0,937,0,0,0,941,0,0,0,0,0,947,0,0,0,0,0,953,0,0,0,0,0,0,0,0,0,0,0,0,0,967,0,0,0,971,0,0,0,0,0,977,0,0,0,0,0,983,0,0,0,0,0,0,0,991,0,0,0,0,0,997,0,0,0,0,0,0,0,0,0,0,0,1009,0,0,0,1013,0,0,0,0,0,1019,0,1021,0,0,0,0,0,0,0,0,0,1031,0,1033,0,0,0,0,0,1039,0,0,0,0,0,0,0,0,0,1049,0,1051,0,0,0,0,0,0,0,0,0,1061,0,1063,0,0,0,0,0,1069,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1087,0,0,0,1091,0,1093,0,0,0,1097,0,0,0,0,0,1103,0,0,0,0,0,1109,0,0,0,0,0,0,0,1117,0,0,0,0,0,1123,0,0,0,0,0,1129,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1151,0,1153,0,0,0,0,0,0,0,0,0,1163,0,0,0,0,0,0,0,1171,0,0,0,0,0,0,0,0,0,1181,0,0,0,0,0,1187,0,0,0,0,0,1193,0,0,0,0,0,0,0,1201,0,0,0,0,0,0,0,0,0,0,0,1213,0,0,0,1217,0,0,0,0,0,1223,0,0,0,0,0,1229,0,1231,0,0,0,0,0,1237,0,0,0,0,0,0,0,0,0,0,0,1249,0,0,0,0,0,0,0,0,0,1259,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1277,0,1279,0,0,0,1283,0,0,0,0,0,1289,0,1291,0,0,0,0,0,1297,0,0,0,1301,0,1303,0,0,0,1307,0,0,0,0,0,0,0,0,0,0,0,1319,0,1321,0,0,0,0,0,1327,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1361,0,0,0,0,0,1367,0,0,0,0,0,1373,0,0,0,0,0,0,0,1381}

Borramos Ceros:

DeleteCases [nueva+nueva2+nueva3, 0]

{2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317,331,337,347,349,353,359,367,373,379,383,389,397,401,409,419,421,431,433,439,443,449,457,461,463,467,479,487,491,499,503,509,521,523,541,547,557,563,569,571,577,587,593,599,601,607,613,617,619,631,641,643,647,653,659,661,673,677,683,691,701,709,719,727,733,739,743,751,757,761,769,773,787,797,809,811,821,823,827,829,839,853,857,859,863,877,881,883,887,907,911,919,929,937,941,947,953,967,971,977,983,991,997,1009,1013,1019,1021,1031,1033,1039,1049,1051,1061,1063,1069,1087,1091,1093,1097,1103,1109,1117,1123,1129,1151,1153,1163,1171,1181,1187,1193,1201,1213,1217,1223,1229,1231,1237,1249,1259,1277,1279,1283,1289,1291,1297,1301,1303,1307,1319,1321,1327,1361,1367,1373,1381}

OBTENEMOS LOS PRIMEROS 221 NÚMEROS PRIMOS

AUTOR: M.M e ING. José de Jesús Camacho Medina