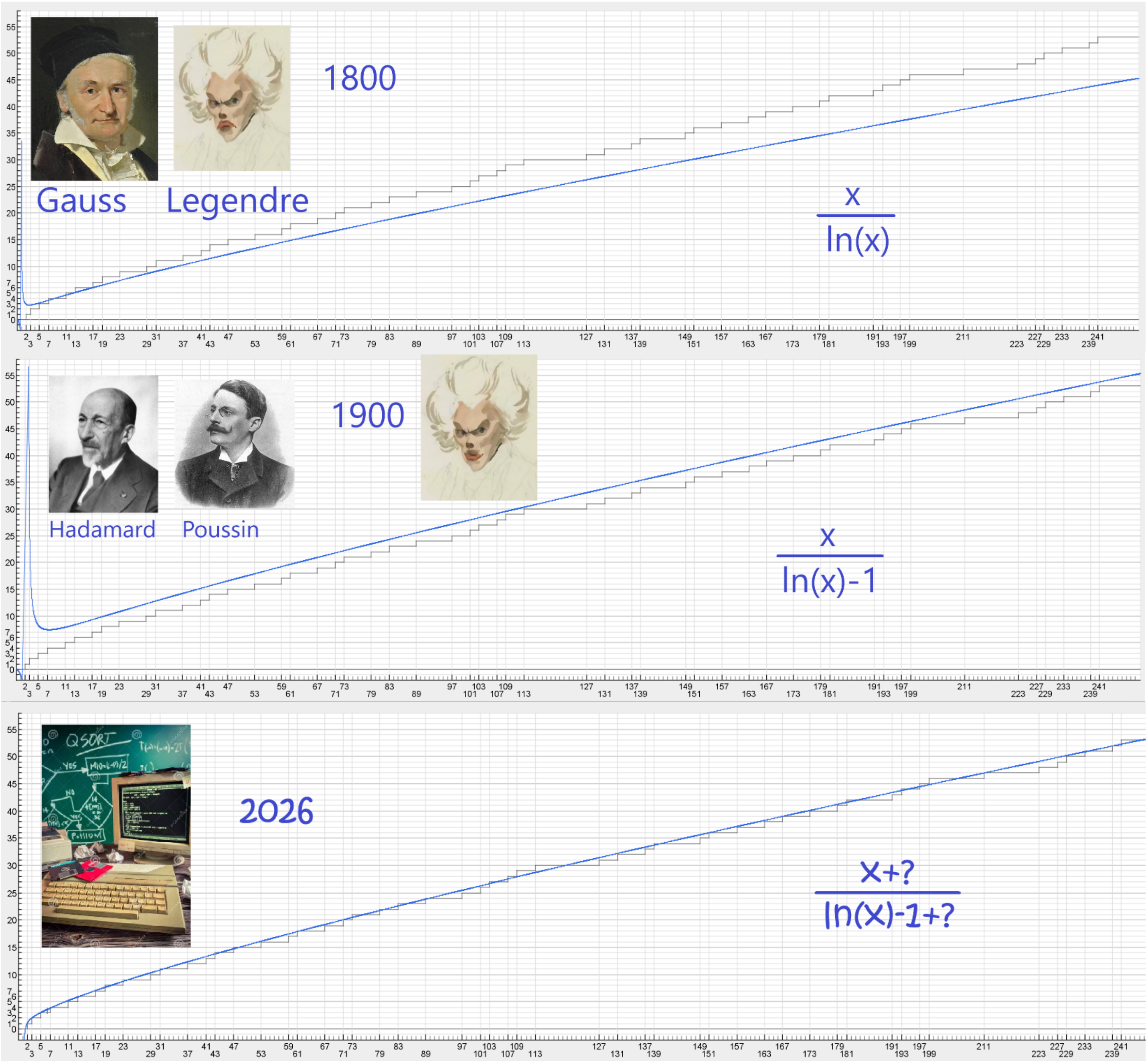
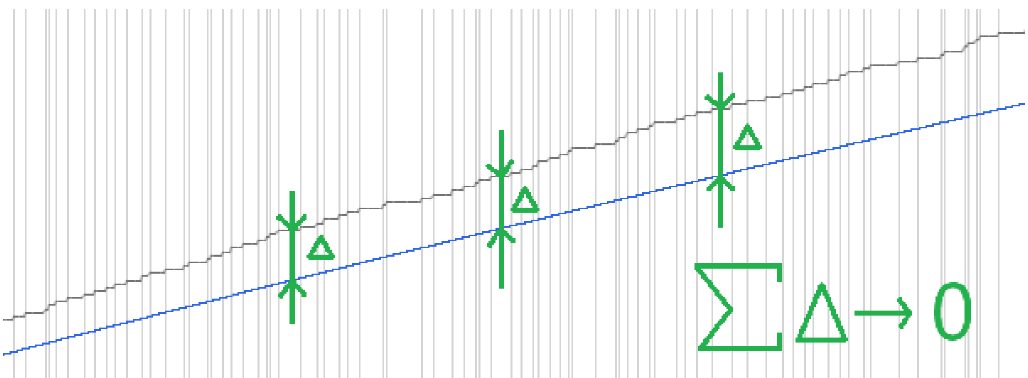
Prime number theorem

Subject: improving Gauss prime-counting function with a brute-force close research program.

Search for the arithmetic function « Logarithm asymptotic » La(x) as an approximation of $\pi(x)$ or anti-derivative form of Li(x).

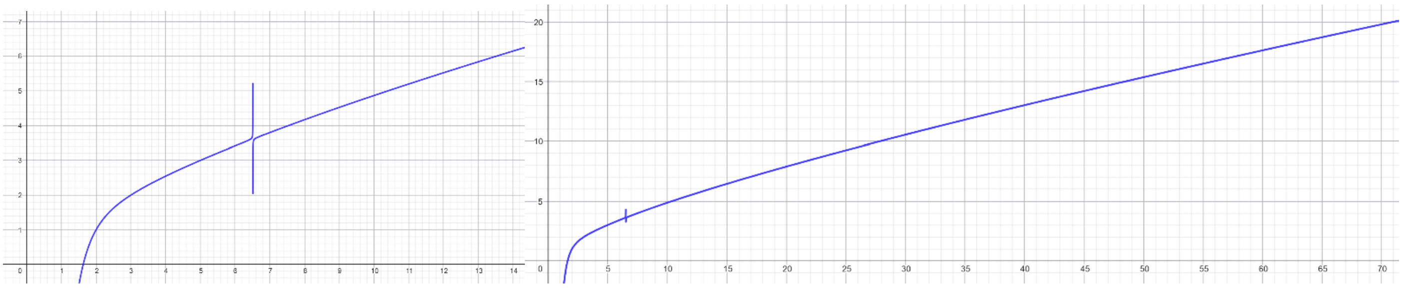


Methodology: Sum the deltas between prime stairs $\pi(x)$ and La(x) and get the closest to zero.



Best result found after years of random search:

$$\mathrm{La}(x) \simeq \frac{x - \frac{4}{3}\sqrt{\frac{7\,x}{\ln(x)}} + 10\left(\frac{\ln(x)}{x}\right)^{2.666} + 0.5\,\ln(x)^{0.666} - 1}{\ln(x) + \frac{8}{e\,\sqrt{5}\left(x + \frac{2}{\sqrt[3]{9}}\sqrt{\frac{e\,\ln(x)}{x}} - 1\right)} - \frac{7}{3\,e\left(\ln(x) - \frac{\ln(x)^{0.666}}{1.62} + 2\left(\frac{\ln(x)}{x}\right)^{0.666} - 1\right)} - 1} \approx \pi(x)$$

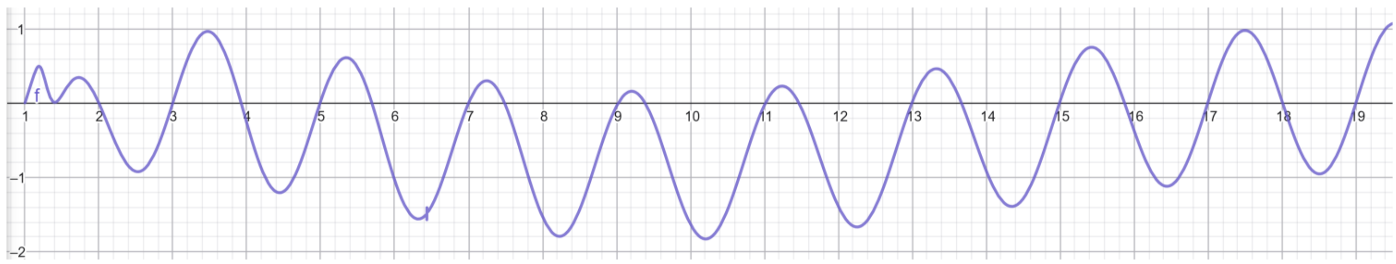


www.geogebra.org/graphing:

(x-4/3sqrt(7x/ln(x))+10(ln(x)/x)^(8/3)+0.5ln(x)^(2/3)-1) /
(ln(x)+8/(esqrt(5)(x+2/cbrt(9)sqrt(eln(x)/x)-1))-7/(3e(ln(x)-(2ln(x)^(2/3))/(1+sqrt(5))+2(ln(x)/x)^(2/3)-1))-1)

The base is approximative but the structure is clear-cut. The structure suggests the primes repartition does not follow a random probability but a precise logarithm.

Conjuncture: If we stir the function integers sin(π x) with a slowing down spring and bend it with a slowing down frequency wave, it will pass close to the odds. Replacing the log with the base could match primes among the odds: sin(π x - e - 0.5sin(x/(ln(x)-1))) + 0.46 sin(x/(ln(x)-1)) - 0.38



Brute-force java program is open source here: github

$\pi(x)$ stair's dataset is generated in Eratosthene -> pixRefMap() and stored in PrimesUtils.

Li(x) values are used for x > 10^30 until x = 10^300.

Run IdentifyLaxTest to search for La(x) function.

Run PrimeTest15 to try to identify primes with a skiing spring function.

Author