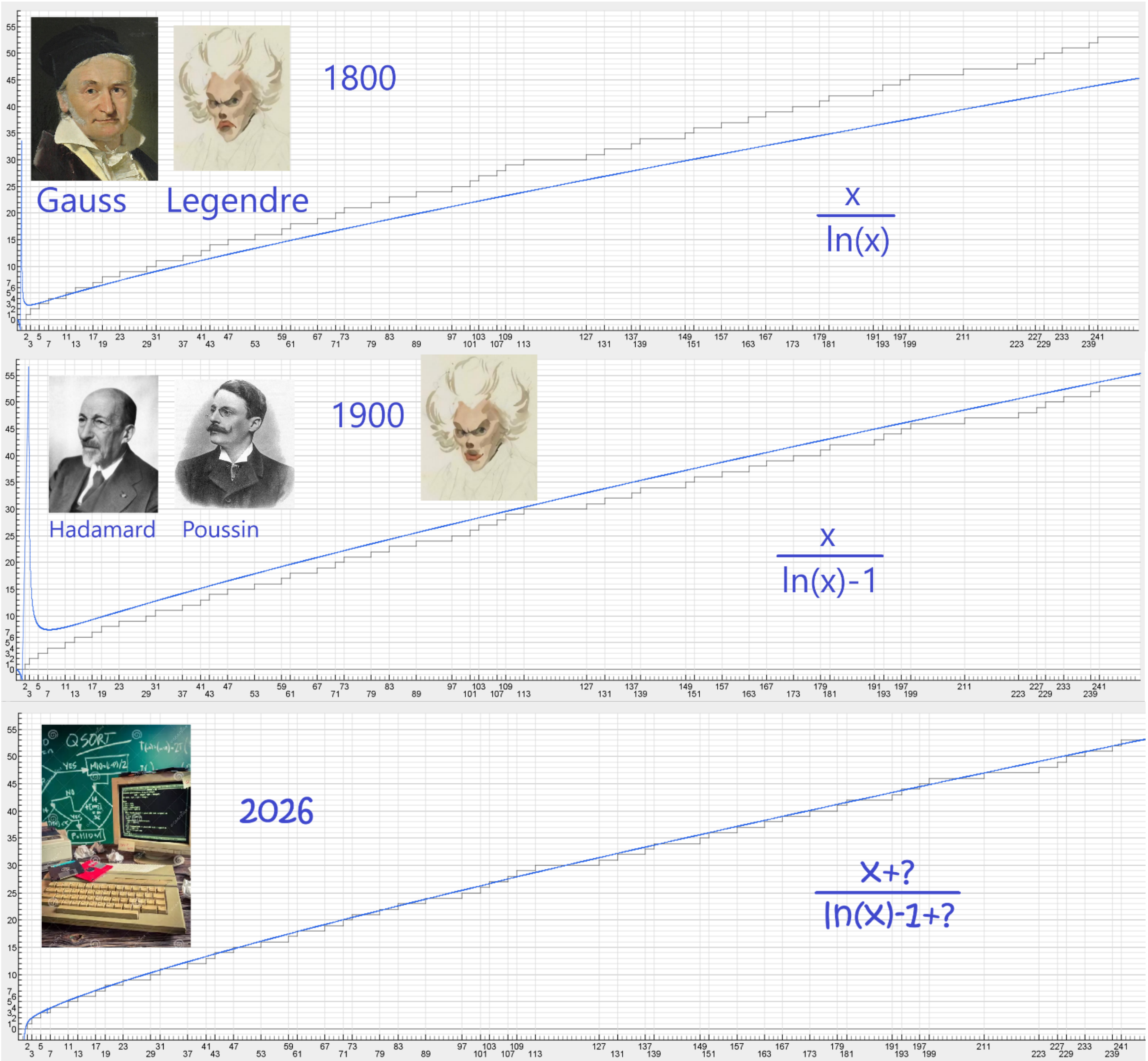
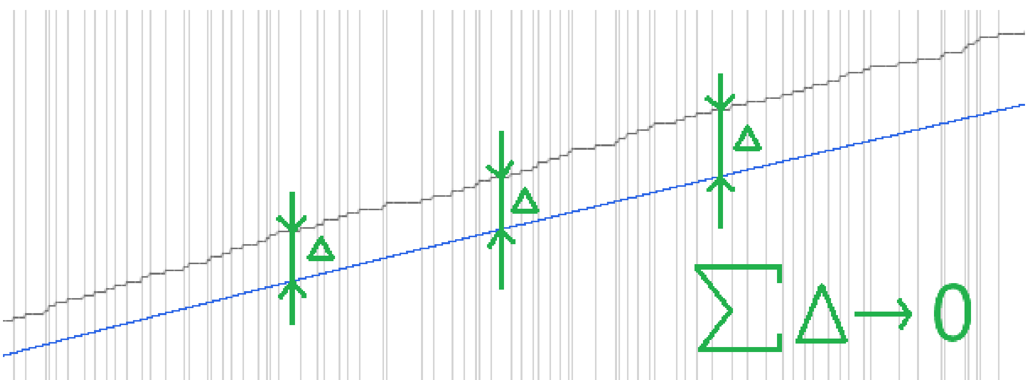
Prime number theorem

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).

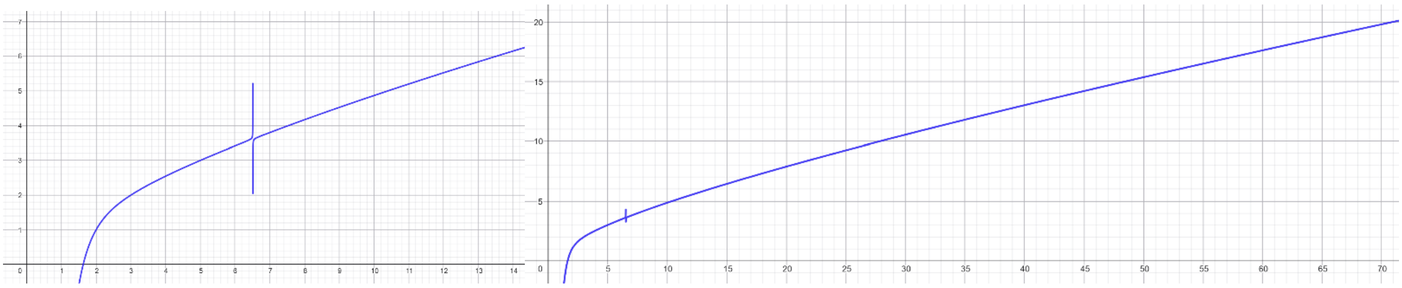


Methodology: Sum the deltas between prime stairs $\pi(x)$ and La(x) and get the closest to zero.



Best result found after years of random search:

$$\mathrm{La}(x) \simeq \frac{x - 3.52\sqrt{\frac{x}{\ln(x)}} + 10\left(\frac{\ln(x)}{x}\right)^{2.666} + 0.5\ln(x)^{0.666} - 1}{\ln(x) + \frac{1.32}{x+1.57\sqrt{\frac{\ln(x)}{x}}-1} - \frac{7}{3e\left(\ln(x) - \frac{\ln(x)^{0.666}}{\varphi} + 2\left(\frac{\ln(x)}{x}\right)^{0.666} - 1\right)} - 1} \approx \pi(x)$$

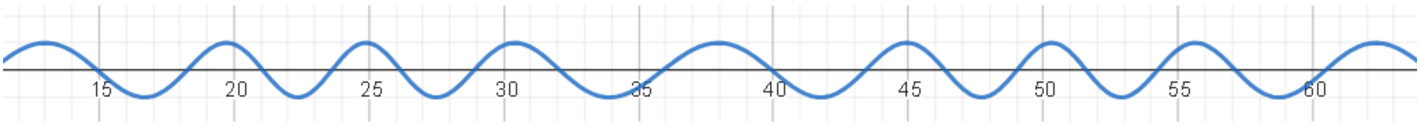


[www.geogebra.org/graphing:](www.geogebra.org/graphing)

(x-3.52sqrt(x/ln(x))+10(ln(x)/x)^(8/3)+0.5ln(x)^(2/3)-1) / (ln(x)+1.32/(x+1.57sqrt(ln(x)/x)-1)-7/(3e(ln(x)-2(ln(x)^(2/3))/(1+sqrt(5))+2(ln(x)/x)^(2/3)-1))-1)

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

Conjuncture: we could use la(x) to identify primes with the zeros of a trigonometric function, spring witch tends and relax at la(x) pace could be a solution: cos(x + cos(lax))



Another one could be the skiing function: cos(x) + cos(lax)

Brute-force java program is open source here: github

π(*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 PrimeTest9 to try to identify primes with a skiing function.

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

Author