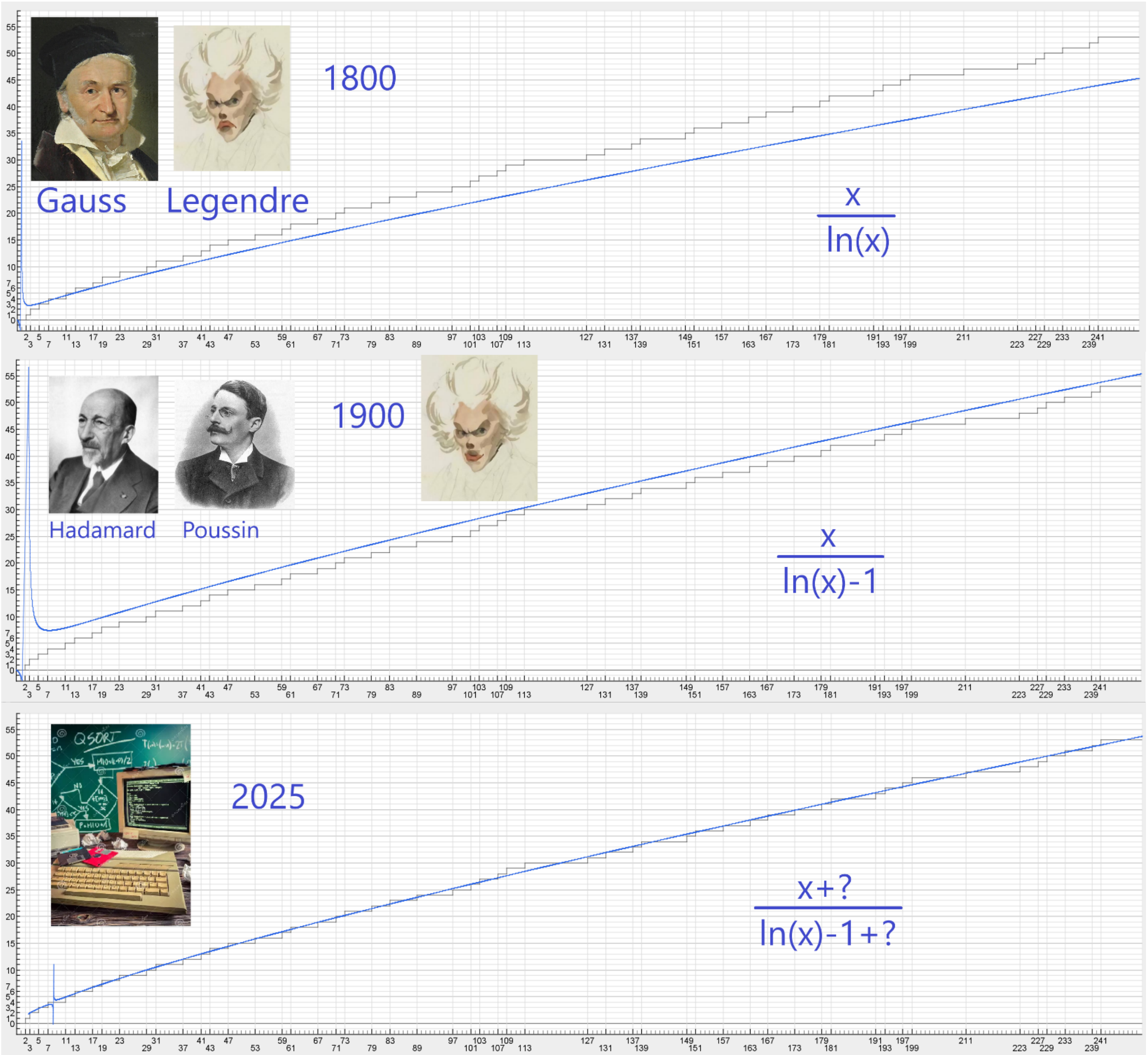
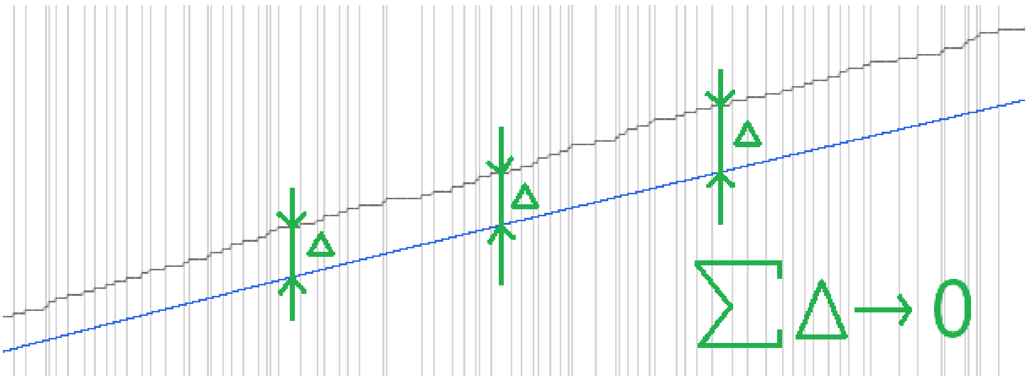
Prime number theorem

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).

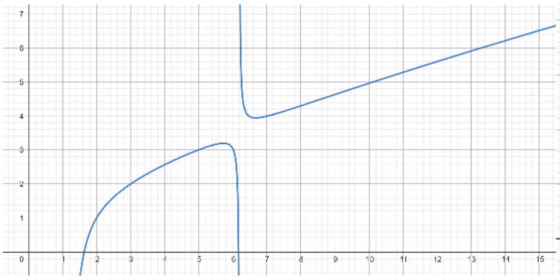
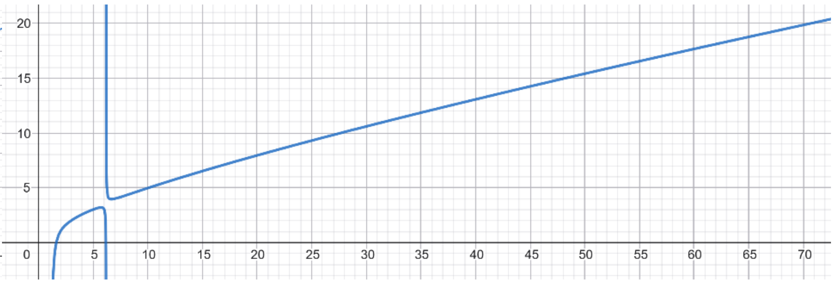


Methodology: Sum the deltas between prime stairs $\pi(x)$ and La(x) and get the closest to zero.



Best result found after months of random search:

$$La(x) \simeq \frac{x - 2.94\sqrt{\frac{x}{\ln(x)}} + \frac{1.52}{x} - 1}{\ln(x) - \frac{1.08}{\ln(x) - 1.58 + 3.63 \cdot \frac{\ln(x)}{x}} - 1} \approx \pi(x)$$

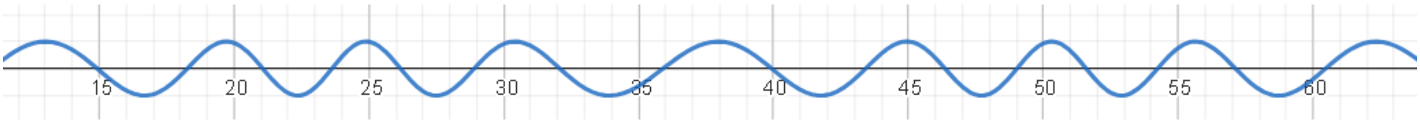



www.geogebra.org/graphing:

(x-2.94*sqrt(x/ln(x))+1.52/x-1)/(ln(x)-1.08/(ln(x)-1.58+3.63*ln(x)/x)-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 PrimeTest11 to try to identify primes with a spring function.

Author