

Sample 1. Compare Fortran's built-in gamma function to FM's

Maximum relative error in Fortran gamma was 1.3163085E-13 for A = 150.500

4.661072627096765+261 = GAMMA(A)

4.661072627097378+261 = GAMMA(TO_FM(A))

Sample 2. Binomial coefficients

Find the probability of getting exactly 10,000 heads
in 20,000 tosses of a fair coin.

$\text{BINOMIAL}(\text{TO_FM}(20000), \text{TO_FM}(10000)) / \text{TO_FM}(2)**20000 = 0.0056418253122204$

Sample 3. Log integral

Estimate the number of primes less than 10^{30} .

$\text{LOG_INTEGRAL}(\text{TO_FM}('1.0\text{E}+30')) = 1.469239889772045\text{E}+28$

Sample 4. Psi and polygamma functions.

Sum (n=1 to infinity) $1/(n^2 * (8n+1)^2) =$

$16*(\text{psi}(1) - \text{psi}(9/8)) + \text{polygamma}(1,1) + \text{polygamma}(1,9/8)$

Sum = 0.0134994861454130

Sample 5. Incomplete gamma and gamma functions.

Probability = 0.1937331301148714