

1. Use the square-and-multiply, or Fast Power Algorithm, to compute $5^{615} \pmod{617}$
2. Use the Extended Euclidean Algorithm to find u, v such that $5u + 617v = \gcd(5, 617)$
3. Use Mathematica to calculate $2^{10,116,848,610} \pmod{10,116,848,611}$
(Remember Mathematica's `PowerMod[]` command)