

Week 8 Wednesday

Make sure you're sitting next to someone!

Iðunn's Apples

Loki, the Norse god of mischief, has stolen Iðunn's apples of immortality. He tells her that he'll give them back if she can give him an example of finitely many distinct prime numbers p_1, p_2, \dots, p_n such that

$$\frac{1}{p_1} + \frac{1}{p_2} + \dots + \frac{1}{p_n}$$

is an integer.

Make sure you know your neighbors name(s), and then work with them to help Iðunn get her apples back!

RSA

1. Using the standard letter-to-number correspondence, BE represents an integer expressed in base 26. What is that integer?

- (A) 14
- (B) 30
- (C) 105
- (D) None of the above

2. When generating his RSA public key, Bob picks the primes $p = 7$ and $q = 11$ and the encryption exponent $e = 23$. What is his decryption exponent d ?

3. Bob's RSA public key has modulus $n = 55$ and encryption exponent $e = 23$. Alice encrypts an integer m and sends Bob the ciphertext $c = 2$. Eve intercepts this ciphertext. What is m ?