

Quiz 1: Number theory

Please show your work to get the full credit

1. Find the prime factorization of the following numbers.

a. $320 =$

b. $203 =$

c. $131 =$

2. How many factors does 150 have?

3. $\gcd(133, 217) =$

4. $\text{lcm}(91, 143) =$

5. Is 1025 a perfect square?

6. Convert 1123_4 to base 10.

7. Convert 100_{10} to base 4.

8. Calculate $122_3 + 212_3$

9. Calculate $111_2 * 111_2$

10. Convert $0.1\overline{2}$ to the simplest fraction

11. Find the remainder when 6^{2025} is divided by 11?