

Math 1303 - Math in the Liberal Arts

Chapter 5 Exam (Exam 3)

Name: _____

For problems 1–8, we are going to let $a = 450,450$, $b = 97,020$, and $c = 67,914,000$. The prime factorizations of a , b , and c are as follows:

$$a = 2 \cdot 3^2 \cdot 5^2 \cdot 7 \cdot 11 \cdot 13, \quad b = 2^2 \cdot 3^2 \cdot 5 \cdot 7^2 \cdot 11, \quad c = 2^3 \cdot 3^2 \cdot 5^2 \cdot 7^3 \cdot 11$$

Use this information to answer problems 1–8.

1. Compute the $\text{GCD}(a, b)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 2. Compute the $\text{GCD}(a, c)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 3. Compute the $\text{GCD}(a, b, c)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 4. Compute the $\text{LCM}(a, b)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 5. Compute the $\text{LCM}(b, c)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 6. Compute the $\text{LCM}(a, b, c)$, leave your answer in the prime factorization form (DO NOT MULTIPLY OUT!).
 7. Write a/b as a rational number in reduced form, where the numerator and denominator are still expressed in fully factored form.
 8. Express $a \cdot (b \cdot c)$ in prime factorization form.
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9. Express $x = 101.215$ as a rational number. You do not have to express it in reduced form.

10. Express $x = 0.\overline{215}$ as a rational number. You do not have to express it in reduced form.

11. Consider the following sequence of numbers: $\{-5, -1, 3, 7, 11, 15, \dots, 327, 331\}$.

(a) Is the sequence arithmetic, geometric, or neither?

(b) How many numbers are there in the sequence listed above?

(c) Compute the sum of the numbers in sequence, you do not have to simplify your answer.

12. Consider the following geometric sequence of numbers: $\left\{2, -\frac{4}{3}, \frac{8}{9}, -\frac{16}{27}, \frac{32}{81}, -\frac{64}{243}, \frac{128}{729}\right\}$.

(a) Find the value of r which makes the sequence geometric.

(b) Find the sum of the 7 terms in the geometric sequence given. You do not have to simplify your answer.