Unit 5: Exponential Functions and Equations

CONCEPT

Name: _____ Date: _____

Solve each problem. Give exact answers; use log or ln as needed and round decimals to the nearest hundredth when asked.

1. Rewrite the exponential equation 2^x = 8 as a logarithm, then solve for x.

Answer: _____

2. Solve for x: 10^x = 1000.

Answer: _____

3. Evaluate log base 2 of 16. That is, find log_2(16).

Answer: _____

4. Solve for x: 5^x = 1. (Recall any nonzero base to the 0 power is 1.)

Answer: _____

5. Evaluate the natural logarithm ln(e^4).

Answer: _____

6. Solve for x: 3^x = 81.

Answer: _____

7. Evaluate log base 10 of 1/100. That is, find log_10(1/100).

Answer: _____

8. Solve for x: e^x = 1.

Answer: _____

9. Solve 4^x = 64 for x.

Answer: _____

10. Evaluate log base 5 of 25. That is, find log_5(25).

Answer: _____

11. A population grows continuously by the model P = P_0 × e^(kt). If the growth rate is k = 0.05 per year, what is the exponent kt after t = 20 years? (Compute k × t.)

Answer: _____

12. Solve for x: 7^x = 7.

Answer: _____