

End of Year Chapter 3 Review

Indicate the answer choice that best completes the statement or answers the question.

1. In 2008, the wolf population in a certain area was 1200. The number of wolves increases exponentially at a rate of 3% per year. Predict the population in 2012.
- a. 1030 b. 1062
c. 1350 d. 1391

2. Find the balance in an account at the end of 14 years if \$5000 is invested at an interest rate of 4.5% that is compounded continuously.
- a. \$9388.05 b. \$9259.72
c. \$8753.36 d. \$7841.56

3. Write $4^3 = 64$ in logarithmic form.
- a. $\log_3 4 = 64$ b. $\log_4 64 = 3$
c. $\log_3 64 = 4$ d. $\log_{64} 3 = 4$

4. Evaluate $\log_4 \frac{1}{16}$.
- a. $-\frac{1}{2}$ b. $\frac{1}{2}$
c. -2 d. 2

5. Solve $\log_4 x - \log_4 5 = \log_4 60$.
- a. 3 b. 12
c. 120 d. 300

6. Solve $5^x = 32$.
- a. 2.023 b. 2.153
c. 2.241 d. 2.392

7. Solve $e^{2x} = 37$.
- a. 1.805 b. 1.822
c. 1.931 d. 1.955

8. Solve $34 = 5 \ln(x - 2)$.
- a. 6.8 b. 898
c. 900 d. 902

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9. Solve $2 \ln(x-1) + \ln(4) = \ln(10-3x)$.

- a. 2 b. $-\frac{3}{4}, 2$
 c. $-\frac{3}{4}$ d. $\ln \frac{3}{4}, \ln 2$

10. Evaluate $\log_3 3^{x-6} - \log_3 3^x$.

- a. -6 b. 1
 c. $\log_3 x$ d. $\log_3 9^{2x-6}$

11. Solve $\ln(x+4) - \ln(x) = \ln(x-2)$.

- a. 4, -1 b. -1
 c. 1 d. 4

12. Solve $e^{2x-7} = e^{x^2-15}$.

- a. -4 b. -2
 c. -2, 4 d. 2

13. Describe the end behavior of the graph of $f(x) = -3e^x$ using limits.

- a. $\lim_{x \rightarrow -\infty} f(x) = 0$ and $\lim_{x \rightarrow \infty} f(x) = \infty$
 b. $\lim_{x \rightarrow -\infty} f(x) = -\infty$ and $\lim_{x \rightarrow \infty} f(x) = \infty$
 c. $\lim_{x \rightarrow -\infty} f(x) = 0$ and $\lim_{x \rightarrow \infty} f(x) = -\infty$
 d. $\lim_{x \rightarrow -\infty} f(x) = \infty$ and $\lim_{x \rightarrow \infty} f(x) = 0$

14. Charise deposited \$5000 in an account paying 5% interest compounded continuously. How long would it take for the account balance to double?

- a. 13.86 yr b. 14.4 yr
 c. 20 yr d. 27.73 yr

15. Solve $e^{2x} + 2e^x = 3$.

- a. -1 b. 0
 c. 1 d. 2