

Answer on Question #57036 – Math – Algebra

16. Simplify the expression shown below:

$$\ln(e^3 x^4)$$

A: $3x^4$

B: $12e$

C: $7\ln(x)$

D: $3 + 4\ln(x)$

17. Solve the equation below x:

$$100 = 25e^{3x}$$

A: $x = \ln 4/3$

B: $x = \ln 100/3 \cdot \ln 25$

C: $x = 4/e^3$

D: $x = \ln 4 - 3$

18. The population (in millions) of a certain country can be approximated by the function $P(x) = 50(1.03)^x$, where x is the number of years since 2000. In which year will the population reach 100 million?

A: 2023

B: 2066

C: 2002

D: 2132

Solution.

16. $\ln e^3 x^4 = \ln e^3 + \ln x^4 = 3 + 4 \ln x$. **Answer: D.**

17. $100 = 25e^{3x} \rightarrow e^{3x} = 4 \rightarrow 3x = \ln 4 \rightarrow x = \frac{\ln 4}{3}$ **Answer: A.**

18. $100 = 50(1.03)^x \rightarrow 1.03^x = 2 \rightarrow x = \frac{\ln 2}{\ln 1.03} \approx 23$. **Answer: A.**