

1. Use the change of base formula to identify the expression that is equivalent to $\log_3 10$.

- (a) $\frac{\ln 3}{\ln 10}$ (b) $10 \log 3$ (c) $\ln \frac{10}{3}$ (d) $\frac{1}{\log 3}$ (e) None of these

2. Simplify: $3e^{2 \ln x}$

- (a) 3^x (b) $3xe^2$ (c) $3x^2$ (d) $\ln x^3$ (e) None of these

3. Which of the following equations is not true?

- (a) $b^{\log_b c} = c$ (b) $\log_b b = b$ (c) $\log_b b = 1$
(d) All of these equations are false. (e) All of these equations are true.

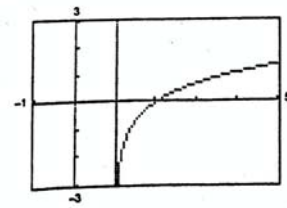
4. Simplify: $\ln \sqrt[4]{e^3 x}$

- (a) $\frac{3}{4} + \frac{1}{4} \ln x$ (b) $\frac{3}{4} + \ln \frac{3}{4}$ (c) $\frac{3e}{4} + \frac{1}{4} \ln x$ (d) $\frac{3e}{4} + \ln \frac{x}{4}$ (e) None of these

5. Find the vertical asymptote: $f(x) = \ln(x+2)$.

- (a) $x = 2$ (b) $x = 0$ (c) $y = 2$ (d) $x = -2$ (e) None of these

6. Match the graph with the correct function.



- (a) $f(x) = e^x$ (b) $f(x) = e^{x-1}$
(c) $f(x) = \ln x$ (d) $f(x) = \ln(x-1)$
(e) None of these.

7. Solve for x : $\ln(7-x) + \ln(3x+5) = \ln(24x)$.

8. Solve the equation for x : $(\ln x - 2)^3 - 4(\ln x - 2) = 0$

9. Evaluate each of the following:

(a) $\log_8 32 + \log_{27} 9$

(b) $(\log_{32} 25)(\log_5 8)$

10. If $\log 3 = a$ and $\log 5 = b$, rewrite $\log\left(\frac{50}{3}\right)$ in terms of a and b .

11. Solve $\log_3(\log_2(\log_4 x)) = 0$