

Problem Set 6

Name: _____

Date: _____

1. An investment is made in a trust fund at an annual percentage rate of 9.5%, compounded quarterly. How many months will it take for the investment to double in value if the formula $A = P \left(1 + \frac{r}{4}\right)^{4t}$ describes this situation? (A = amount after compounding, P = principal, r = annual percentage rate, t = time in years)

A. 7.3 B. 14.6 C. 72.8 D. 88.6

2. If $9^{x-2} = 81^{x+1}$ find the value of 2^x .

A. -8 B. 16 C. $\frac{1}{16}$
D. none of these

3. If $\log_{10} 3 = a$ and $\log_{10} 7 = b$ find x in terms of a and b if $9^x = 49$.

A. $x = \frac{a}{b}$ B. $x = \frac{b}{a}$
C. $x = \frac{b-a}{2}$ D. none of these

4. The real value of x such that 27^{x-1} divided by 3^{x-1} equals 81^{3x} is:

A. $-\frac{1}{3}$ B. 0 C. $\frac{1}{3}$ D. $\frac{3}{10}$

5. Find x such that $125^{x-1} = 25$.

A. $x = \frac{3}{2}$ B. $x = \frac{5}{3}$ C. $x = 1$
D. none of these

6. Express y in terms of x if $\log y = \frac{1}{3} \log x + \log 4$.

A. $y = \log 4x^{1/3}$ B. $y = \log 3x^{1/4}$
C. $y = 3x^{1/4}$ D. $y = 4x^{1/3}$

7. Which of the following is false?

A. $\log a^2b = 2 \log a + \log b$
B. $\log \sqrt[q]{m^p} = \frac{p}{q} \log m$
C. If $5^4 = 625$, then $\log_5 625 = 4$
D. $\log \sqrt{ab} = \frac{1}{2} \log a + \log b$

8. Sue ate 100 pizzas in 5 days, each day eating 6 more than on the previous day. How many pizzas did she eat on the fourth day?

- A. 26 B. 30 C. 32
D. none of these

9. Find y so that $\log_4 8 = y$.

- A. 3 B. $\frac{3}{2}$ C. $\frac{1}{2}$
D. none of these

10. Which one of the following statements is false?

- A. $\log_{10} \frac{10^7}{10^4} = 3 \log_{10} 10$
B. $\log_{10} 4 + \log_{10} 9 = \log_{10} 13$
C. $\log_2 16 = 4$
D. none of these

11. Find the exact value of $\log_2 4 + \log_4 2 + \log_4 16 + \log_{16} 4 + \log_2 16$.

- A. 10 B. 9 C. 7 D. $\log_4 4$

12. $3^{(\log_9 4)} =$

- A. 2 B. 12 C. 16 D. $\frac{9}{4}$

13. Solve for x : $8x^{3/2} = 27$

- A. $\frac{4}{9}$ B. $\frac{9}{4}$ C. 2 D. 3

14. Evaluate: $\log_{10}[\log_3(\log_3 125)]$

- A. 1 B. 0 C. \emptyset
D. none of these

15. Solve $x^{-2/3} = 4$ for x :

- A. $\frac{1}{8}$ B. -6 C. -8
D. none of these

16. If $\log_{10}(x+4) + \log_{10} 5 = 2 + \log_{10} 3$, then x is:

- A. 56 B. 58 C. 59 D. 60

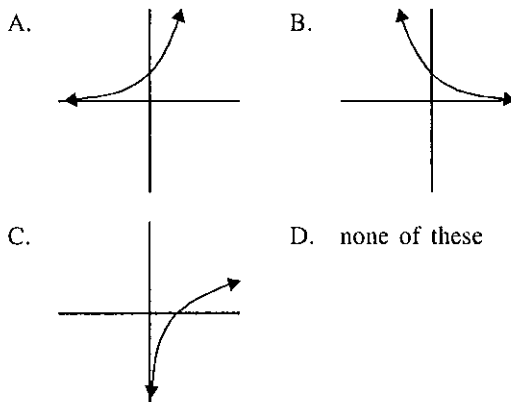
17. Solve: $\log_2 x = 3 - \log_2(x + 2)$

- A. 2 only B. both 2 and -4
C. $-4 < x < 2$ D. no solution

18. Find the twentieth term of 6, 3, 0, ...

- A. -48 B. -51 C. -57
D. none of these

19. Which of the following graphs best represents the shape of the graph $y = e^x$?



20. Find the twentieth term of 10, 7, 4, ...

- A. -47 B. -50 C. -44
D. none of these