

HW #72: SHOW ALL WORK on a separate piece of paper. All graphs must be on graph paper.

1. Find the value of \$1000 deposited for 8 years in an account paying 8% annual interest compounded semiannually.
2. Find the value of \$1000 deposited for 10 years in an account paying 6% annual interest compounded monthly.
3. How much money must be deposited now in an account paying 8% annual interest, compounded quarterly, to have a balance of \$1000 after 10 years?
4. Write an exponential function to model the situation. Then estimate the value of the function after 5 years (to the nearest whole number).
A population of 390 animals that decreases at an annual rate of 11%.
5. Marion decides to invest \$6000 at 5% interest compounded continuously. Find the value of the investment after seven years.
6. Write the equation $\log_{243} 729 = \frac{6}{5}$ in exponential form.
7. Evaluate without using a calculator. $\log_2 16$
8. Evaluate without using a calculator. $\log_7 \frac{1}{49}$
9. Evaluate $\ln e^{-4}$.

Graph the function. State the domain and range.

10. $y = \log_2(x + 1)$
11. $y = 2(3)^{x-1} + 4$
12. $y = -3\left(\frac{1}{2}\right)^x + 6$

13. True or False: $\log \frac{8}{9} = (\log 8) \div (\log 9)$
14. True or False: $\log(8 \cdot 3) = (\log 8) + (\log 3)$
15. Condense the expression.
 $\frac{1}{2} \log_5 16 - 3 \log_5 x + 4 \log_5 y$
16. Expand the expression. $\ln \frac{2x}{y^4}$
17. Condense the expression.
 $\frac{1}{5} \log_3 32 - 2 \log_3 x + \frac{1}{2} \log_3 y$

Solve:

18. $\frac{1}{9} = 27^{7x-6}$
19. $2^3 \cdot 4^x \cdot 8^2 = 16^3$
20. Solve for x . $4^{-2} \cdot 4^{x+1} \cdot 4^3 = 4^5$
21. Solve. $6^{-0.2x} - 3 = 7$

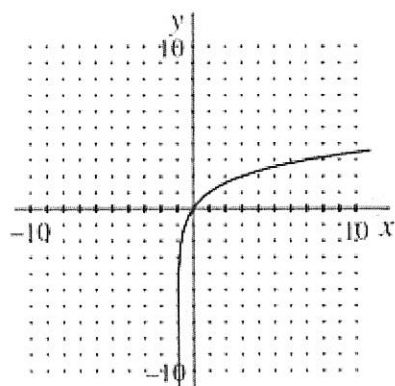
Solve the equation. Check for extraneous solutions.

22. $\ln(x + 7) = \ln(3x - 5)$
23. $7 \log_5(x) - 3 = 15$
24. $\log_4(x + 6) + \log_4 x = 2$
25. $\log_2(-x) + \log_2(x + 12) = 5$
26. $\log_5(3x + 9) = 2$

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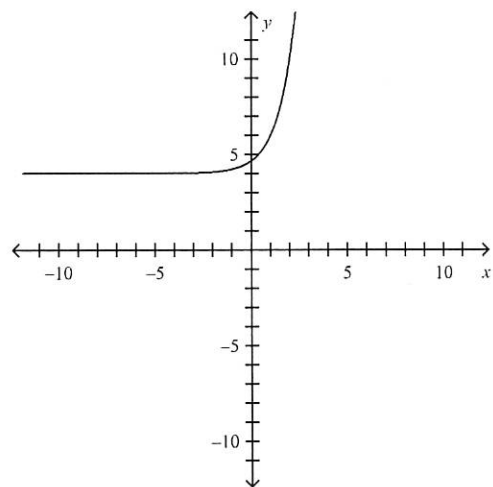
Answer Section

1. \$1872.98
2. \$1819.40
3. \$452.89
4. $f(x) = 390(0.89)^x$; 218
5. \$8514.41
6. $243^{6/5} = 729$
7. 4
8. -2
9. -4
- 10.



Domain: $x > -1$; Range: all real numbers

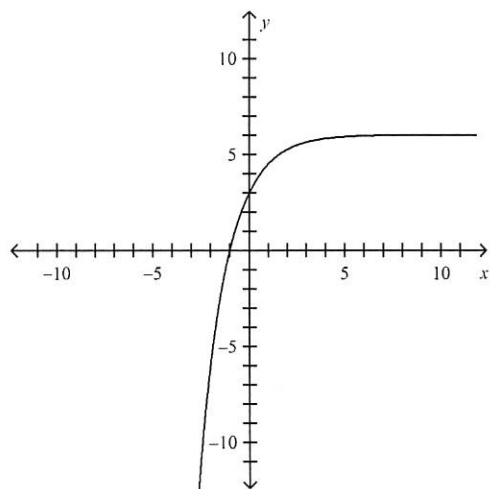
11.



D: All real numbers

R: $y > 4$

12.



D: All real numbers

R: $y < 6$

13. False

14. True

15. $\log_5 \frac{4y^4}{x^3}$

16. $\ln 2 + \ln x - 4 \ln y$

17. $\log_3 \frac{2\sqrt{y}}{x^2}$

18. $\frac{16}{21}$

19. $\frac{3}{2}$

20. 3

21. $x = -6.425$

22. $x = 6$

23. 62.712

24. 2

25. $x = 24$ or 28

26. $\frac{16}{3}$