Algebra 2 Unit 6 Review

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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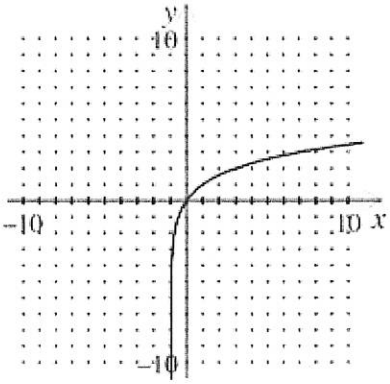
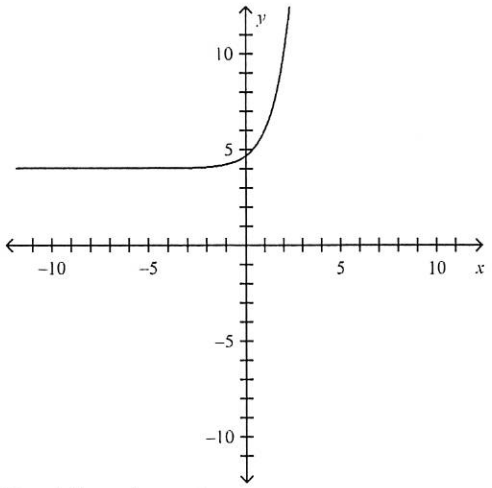
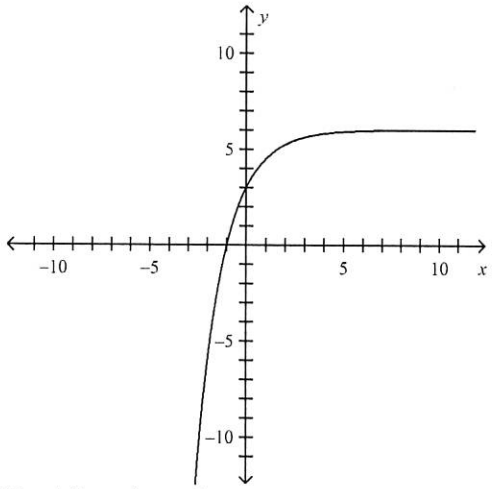
Answer Section

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. $\log_5 \dfrac{4y^4}{x^3}$
16. $\ln 2 + \ln x - 4\ln y$
17. $\log_3 \dfrac{2\sqrt{y}}{x^2}$
18. $\dfrac{16}{21}$
19. $\dfrac{3}{2}$
20. 3
21. $x = -6.425$
22. $x = 6$
23. 62.712
24. 2
25. $x = 24$ or 28
26. $\dfrac{16}{3}$