

Name: Answer Key
 Date: _____ Pd: _____

Unit 2 Test Review

Work out each question on a separate sheet of paper; YOU MUST SHOW YOUR WORK! Place your answer on the review sheet and circle it. NO WORK EQUALS NO CREDIT!

- Write the expression as a single logarithm: $\log_8 90 - \log_8 9$
 $\log_8(90/9)$
- Evaluate the expression $\ln e^{14}$.
 14
- What is the value of the expression $\log_2 \frac{1}{64}$?
 -6
- Describe the transformation(s) of $g(x) = 4^x$ to $g(x) = 4^{x+2} - 9$.
 left 2, down 9, HA $y = -2$
- Write the equation $\log_{16} 8 = \frac{3}{4}$ in exponential form.
 $16^{3/4} = 8$
- The sales of lawn mowers t years after a particular model is introduced is given by the function $y = 5500 \ln(9t + 4)$, where y is the number of mowers sold. How many mowers will be sold 5.5 years after a model is introduced? Round the answer to the nearest whole number.
 $21,888$ mowers sold after 5.5 yrs.
- How much money invested at 5% compounded continuously for 5 years will yield \$820?
 $\$638.62$ is your starting amount.
- Evaluate the expression $e^{\ln 7}$.
 7
- What is the value of the expression $\log_{81} 3^7$?
 $7/4$
- Write the equation in logarithmic form: $7^5 = 16,807$
 $\log_7 16,807 = 5$
- Solve the equation: $-2 + 6 \log_{12}(5x + 2) = -14$.
 $\left\{ \frac{-287}{720} \right\}$

- Suppose you invest \$1500 at an annual interest rate of 8.5% compounded continuously. How much will you have in the account after 4 years?
 $\$2107.42$ is how much is in the account.

13. Graph $y = 3 \left(\frac{1}{6} \right)^{x-2} + 1$.

- An initial population of 820 quail increases at an annual rate of 6%. Write an exponential function to model the quail population.
 $A = 820(1 + .06)^t$

15. Solve the equation: $6 \cdot 8^{3-9x} + 10 = 10$.
 \emptyset

16. What is the domain and range of the function $y = 2 \cdot \left(\frac{1}{2} \right)^{x+1} - 3$?
 $D: (-\infty, \infty)$ $R: (-3, \infty)$

17. What is the value of the expression $\log_4 625$?
 4.6439

- The Smiths bought an apartment for \$75,000. Assuming that the value of the apartment will appreciate at most 5% a year, how much will the apartment be worth in 4 years?
 The apartment will be worth $\$91,162.97$.

19. Solve the equation: $25^{3x-3} = 625^{-2x}$.
 $\left\{ \frac{8}{17} \right\}$

20. Solve the equation: $\log(3x - 7) + \log 6 = 2$.
 $\{ 7.88893 \}$

- State the property or properties of logarithms used to rewrite the expression.

$\log_4 24 - \log_4 8 = \log_4 3$ Quotient Property

- Given the parent function of $f(x) = 2^x$, write the new function with the given transformations.

1) Translated left 3 units. $\rightarrow C$
 2) Translated up 5 units. $\rightarrow D$
 $f(x) = 2^{x+3} + 5$

23. Write the given equation in exponential form.

$$\log_7 \frac{1}{343} = -3$$

$$7^{-3} = \frac{1}{343}$$

24. State the property or properties of logarithms used to rewrite the expression.

$$\log_6 4 + \log_6 2 = \log_6 8$$

Product Property

25. Graph the logarithmic equation: $y = \log(x - 3) - 4$

26. What is the asymptote that exists on its graph for the function $y = 4^{x+2} + 7$

$$HA: y = 7$$

27. What is the domain and range of the function $y = \log(x + 5) - 2$?

$$D: (-5, \infty) \quad R: (-\infty, \infty)$$

28. Solve the equation: $\ln 2 + \ln(4x + 5) = 4$. Round to three places.

$$\{5.575\}$$

29. Solve the equation: $\ln(5 - 3x) = \ln(-5x - 5)$.

$$\{-5\}$$

30. State the property or properties of logarithms used to rewrite the expression.

$$2 \log 6 + \log \frac{1}{3} = \log 12$$

Power Property

Product Property