Algebra 2
7.1-7.3 Review #2

Name: __Key__
Period: _____

Without graphing, determine whether the function represents exponential growth or exponential decay. $3\left(\frac{1}{7}\right)^x$

1. $y = 3(7)^{-x}$

Decay

2. $y = 4(2.5)^x$

Growth

3. $y = 5(0.75)^x$

Decay

4. Identify the meaning of the variables in the exponential growth or decay function.

$$A(t) = a(1 \pm r)^t$$

*(1+r) is for growth
*(1-r) is for decay

$A(t) =$ Final amount

$a =$ Initial amount

$r =$ rate

$t =$ time

5. The population of Bainsville is 2000. The population is supposed to grow by 10% each year for the next 5 years. How many people will live in Bainsville in 5 years?

$$y = 2000(1 + .10)^5 = \$3221.\text{~~02~~} \text{ people}$$

6. Identify the meaning of the following variables in the formula for continuously compounded interest.

$$A(t) = P \cdot e^{rt}$$

$P =$ Principle amount

$r =$ Rate

$t =$ time

Find the amount in a continuously compounded account for the given conditions.

7. principal: $300

annual interest rate: 5%

time: 4 yr

$$A = 300e^{(.05)(4)}$$
$$\$366.42$$

8. principal: $650

annual interest rate: 6.5%

time: 20 yr

$$A = 650e^{.065 \cdot 20}$$
$$\$2,385.04$$

9. **Miss Schnaidt invests $2000 in an account that pays 3.7% interest compounded weekly. How much money will she have in the account after 7 years?**

$$2000\left(1+\frac{.037}{52}\right)^{52\cdot 7} = \$2,591.03$$

Write each equation in logarithmic form.

11. $32 = 2^5$

$\log_2 32 = 5$

12. $243 = 3^5$

$\log_3 243 = 5$

13. $625 = 5^4$

$\log_5 625 = 4$

Write each equation in exponential form.

14. $\log_3 9 = 2$

$3^2 = 9$

15. $\log_5 125 = 3$

$5^3 = 125$

16. $\log_8 512 = 3$

$8^3 = 512$

Evaluate each logarithm. *Hint: change to exponential form and rewrite as powers of the same base.

17. $\log_9 27$

$9^x = 27$

$3^{2x} = 3^3$

$2x = 3$

$x = 3/2$

18. $\log_8 256$

$8^x = 256$

$2^{3x} = 2^8$

$3x = 8$

$x = 8/3$

19. $\log_{125}\frac{1}{25}$

$125^x = \frac{1}{25}$

$5^{3x} = 5^{-2}$

$3x = -2$

$x = -2/3$

Solve for x. Round to the nearest hundredth if necessary. SHOW ALL WORK!
***Hint: change to exponential form and rewrite as powers of the same base.**

20. $\log_x 6 = \frac{1}{3}$

$\left(x^{1/3}\right)^3 = (6)^3$

$x = 216$

21. $4 = \log_7 x$

$7^4 = x$

$x = 2,401$

22. $x = \log_5\frac{1}{25}$

$5^x = \frac{1}{25}$

$5^x = 5^{-2}$

$x = -2$

23. $10^x = 487$

$\log 10^x = \log 487$

$x \log 10 = \log 487$

$x = \log 487$

$x = 2.69$