Name: _____ Date: _____

Exponential Growth and Decay Homework

$Growth: y = P(1+r)^t$ $Decay: y = P(1-r)^t$

1) Given the equation $y = 35(0.57)^x$
   a) Does this equation represent growth or decay? decay
   b) What is the rate of growth or decay? $1-r=0.57$, $r=.43$ → 43%
   c) What is the initial value? 35
   d) Evaluate for x = 5 2.1059

2) Given the equation $y = 225(1.23)^x$
   a) Does this equation represent growth or decay? growth
   b) What is the rate of growth or decay? 0.23 → 23%
   c) What is the initial value? 225
   d) Evaluate for x = 2 340.4025

3) Given the equation $y = 154(1.06)^x$
   a) Does this equation represent growth or decay? growth
   b) What is the rate of growth or decay? 0.06 → 6%
   c) What is the initial value? 154
   d) Evaluate for x = 7 231.559

4) Ryan is saving for his college tuition. He has $2,550 in a savings account that pays 6.25% annual interest.
   a) Write an exponential equation describing this situation. $y = 2550(1+0.0625)^t$
   b) How much money will Ryan have in his account 6 years from now?
   $y = 2550(1+.0625)^6 = \$3,668.71$

5) A used car was purchased for $12,329 this year (2014). Each year the car's value decreases 8.5%.
   a) Write an exponential equation describing this situation. $y = 12,329(1-.085)^t$
   b) What will the car be worth in 2020? ↙ 6 years later
   $y = 12,329(1-.085)^6 = \$7235.26$

6) Jeremiah owns a business. His first year he made $11,212, each of the following years his profit increased 12%.
   a) Write an exponential equation describing the situation. $y = 11,212(1+.012)^t$
   b) What will he make in 20 years?
   $y = 11,212(1+.12)^{20} = \$108,154.23$

initial amount ↓ 5. Given the equation $y = 35(0.57)^x$ ← gld factor

a. Does this equation represent growth or decay? DECAY

b. What is the growth or decay factor? 0.57

$1 - r = 0.57$
$-r = 0.43$
$r = 0.43$
$= 43\%$

c. What is the rate of growth or decay? 0.43 → 43%

d. What is the initial value? 35

6. Given the equation $y = 1.3^x$

same as: $y = 1(1.3)^x$

a. Does this equation represent growth or decay? growth

b. What is the growth or decay factor? 1.3

$1 + r = 1.3$
$r = .3$
$= 30\%$

c. What is the rate of growth or decay? .3 → 30%

d. What is the initial value? 1

7. Given the equation $y = 1.4(1.03)^x$

a. Does this equation represent growth or decay? growth

b. What is the growth or decay factor? 1.03

$1 + r = 1.03$
$r = 0.03$
$= 3\%$

c. What is the rate of growth or decay? .03 → 3%

d. What is the initial value? 1.4