HW 6-4 Name: Selected Answers

Secondary III Date: _____ Class: _____

Determine whether the following represent exponential growth or decay

1. $y=4(5)^x$ $5>1$ Growth

2. $y=2\left(\frac{1}{3}\right)^x$

3. $y=4\left(\frac{7}{3}\right)^x$ $\frac{7}{3}>1$ Growth

4. $y=\frac{1}{4}(3)^x$

Write an exponential function to represent the situation

5. Initial value = 5, increasing at a rate of 17% per year.

$f(x)= 5(1+0.17)^x = 5(1.17)^x$

6. Initial value = $4000, decreasing at a rate of 5.5% per year.

Write an exponential function to represent the situation and answer the question

7. The 2000 population of Lehi was 26,000, and was increasing at a rate of 8.5% per year. Predict the population of Lehi in 2015. $x=0$ is year 2000 $x=15$ is year 2015

$f(x)= 26000(1+.085)^x$

$f(15)= 26000(1.085)^{15} = 88393.31 \approx 88,400$ people

8. If Hugh invests $1500 at 4% compounded annually, how much money will he have after 7 years?

9. How much money will you have after 6 years if you invest $1000 at 5% interest compounded continuously? $A(t)= Pe^{rt}$

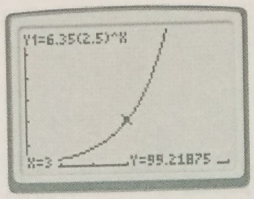
$P=1000$
$r=0.05$
$t=6$

$A(6)= 1000e^{0.05(6)} = \$1349.86$

$A(t)= 1000e^{0.05t}$

10. How much money will you have after 9 years if you invest $4000 at 3% interest compounded continuously?

24. Explain the Error A student has a baseball card that is worth $6.35. He looks up the appreciation rate and finds it to be 2.5% per year. He wants to find how much it will be worth after 3 years. He writes the function $f(t) = 6.35(2.5)^t$ and uses the graph of that function to find the value of the card in 3 years.



According to his graph, his card will be worth about $99.22 in 3 years. What did the student do wrong? What is the correct answer?