**Exponential Growth/Decay Models – Day 2 HW Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Algebra 2 Date \_\_\_\_\_\_Period \_\_\_\_\_\_**

**Mixed Practice. Show all work.**

1.) Consider the function $y=75(0.87)^{t}$

* 1. Does this represent Growth or Decay? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Write “(b)” in the form “(1 ± r)” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is r? \_\_\_\_\_\_\_\_\_
	3. Find y when t = 15. Round to the nearest tenths.

2.) Consider the function $y=50(1.046)^{t}$

1. Does this represent Growth or Decay? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Write “(b)” in the form “(1 ± r)” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is r? \_\_\_\_\_\_\_\_\_
3. Find y when t = 15. Round to the nearest tenths.

3.) Consider the function $y=850,000(0.40)^{t}$

1. Does this represent Growth or Decay? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Write “(b)” in the form “(1 ± r)” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is r? \_\_\_\_\_\_\_\_\_
3. Find y when t = 15. Round to the nearest tenths.

4.) The foundation of your house has about 1,200 termites. The termites grow at a rate of about 2.4% per day. After 29 days, how many terminates will be in the foundation of your house?



5.) An adult takes 400 mg of ibuprofen. Each hour, the amount of ibuprofen in the person’s system decreases by 29%. How many milligrams of ibuprofen are left after 6 hours?

6.) You have inherited land that was purchased for $30,000 in 1960. The value of the land increased by approximately 5% per year. What is the approximate value of the land in the year 2005?

7.) Each year the local country club sponsors a tennis tournament. Play starts with 128 participants. At the end of each round, half of the players are eliminated.

 a. Does the situation described represent a growth or decay pattern? What is the rate?

|  |  |
| --- | --- |
| Round | #Players |
| 0 | 128 |
| 1 |  |
| 2 |  |
| 3 |  |

b. Fill in the table below. c. Write an equation that would represent the situation described. Then determine the number of players remaining at the end of Round 5 using the equation.

8.) The Houston Astrodome was the first multipurpose domed stadium. It was completed in 1965 at a cost of $45.35 million dollars. Construction costs have increased by approximately 6% each year since 1965.

1. Does this represent exponential growth or decay? Write the formula you would use.
2. Using the formula from part A, write an equation that models the situation over any given time, t.
3. Using your equation from part B, determine how much it would cost to build the Astrodome today.