**Honors Algebra II Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Unit: 8** | **Homework**: 2 |
| 1. When the base in an exponential function is between 0 and 1, the function shows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? | 1. Tell whether the function shows growth or decay.   a) b) |
| 1. The amount of freight transported by rail in the United States was about 580 billion ton-miles in 1960 and has been increasing at a rate of 2.32% per year since then. | |
| a) Write a function representing the amount of freight, in billions of ton-miles, transported annually (1960 = year 0).  c) In what year would you predict that the number of  ton-miles would have exceeded or would exceed 1 trillion (1000 billion)? | b) |
| 1. Radon-222 is a gas that escapes from rocks and soil. It can accumulate in buildings and can be dangerous for people who breathe it. Radon-222 decays to polonium and eventually to lead. 2. Find the percent decrease in the amount of radon-222 each day. |  |
| 1. Write an exponential decay function for the amount of a 500 mg sample of radon-222 remaining after *t* days. | 1. How much of the radon-222 sample would remain after 14 days? |
| 1. How can the function  be rewritten so that the exponential term has a base of 4? | 1. For the function , by what percentage does p(x) change as x increases from 0 to 1? Does this function model exponential growth or exponential decay? |
| 1. Colleen’s station wagon is depreciating at a rate of 9% per year. She paid $24,500 for it in 2002. What will the car be worth in 2008 to the nearest hundred dollars? | |
| 1. A parcel of land Jason bought in 2000 for $100,000 is appreciating in value at a rate of about 4% each year. 2. Write a function to model the appreciation of the value of the land. 3. Graph the function. 4. In what year will the land double its value? |  |