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

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| **Unit: 5** | **Homework**: 3 |
| **Standard**: **Analyze functions using different representations**   * **MGSE9-12.F.IF.7** Graph functions expressed algebraically and show key features of the graph both by hand and by using technology. * **MGSE9‐12.F.IF.7e** Graph exponential and logarithmic functions, showing intercepts and end behavior. | |
| **Essential Questions:** How can equations describe growth and decay situations? | |
| **Key Words**: **exponential function, logarithmic function, inverse function, logarithm , base, asymptote, exponential growth, exponential decay** | |
| Use the function f (**x)** = 3 **x**.  1. Does the function show exponential growth or decay? Explain.  Is f (4) greater than or less than f (3)? Explain how you can draw this conclusion. | |
| 2. Kyle estimates that his business is growing at a rate of 5% per year. His profits in 2005 were $67,000.  Estimate his profits for 2010 to the nearest hundred dollars. | |
| Use the function f (**x)** **=** 0.4**x** .  3. Does the function show exponential growth or decay? Explain.  Is f (-3) greater than or less than f (- 2)? Explain how you can draw this conclusion. | |
| 4. 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? | |
| 5. A parcel of land Jason bought in 2000 for  $100,000 is appreciating in value at a rate of  about 4% each year.  a. Write a function to model the appreciation  of the value of the land.    b. Graph the function.  c. In what year will the land double its value? | a207c07_prc_l01ak_004a_Aa207c07_prc_l01ak_004a_A |
| 6. A certain car depreciates about 15% each year.  a. Write a function to model the depreciation in value for a car valued at $20,000.    b. Graph the function. | a207c07_prb_l01ak_005a_A |