**Chapter 4 Day 6**

Historical and Exponential Depreciation

*Write, interpret, and graph an exponential depreciation equation.*

*Manipulate the exponential depreciation equation in order to determine time, original price, and depreciated value.*

|  |  |
| --- | --- |
| **Word** | **Definition** |
| **Depreciate** |  |
| **Appreciate** |  |
| **Historical Depreciation** |  |
| **Exponential Depreciation** |  |
| **General form of Exponential Depreciation Equation** |  |

***Value of Vehicles***

***Important to Know***

On average, a vehicle loses about \_\_\_\_ - \_\_\_\_% once it is driven \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, approximately \_\_\_\_\_% after the first year, and then \_\_\_\_ - \_\_\_\_% each \_\_\_\_\_\_\_\_\_\_ for the next \_\_\_ years. By the \_\_\_\_\_\_ of the 5th year, the total \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is about \_\_\_\_\_\_%!!

***Finding Depreciation***

To get an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the \_\_-year depreciation \_\_\_\_\_\_\_\_\_\_ of a vehicle, visit <http://www.edmunds.com/tco.html> and enter the vehicle information. We can then use <https://www.desmos.com/calculator> to graph our data and find our equation (using exponential regression).

**Example 1:**  Joan purchased a four-year old car for $16,400. When the car was new, it sold for $23,000. Find the depreciation rate to the nearest tenth of a percent.

**Example 2:** Vehicle Information: 2018 Toyota 4Runner TRD Pro Cost: $\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Age** | **Depreciation Amount** | **Value of Vehicle** |
| Drive off lot | $ | $ |
| 1 | $ | $ |
| 2 | $ | $ |
| 3 | $ | $ |
| 4 | $ | $ |
| 5 | $ | $ |

On Desmos, enter the data from the table. Then, add an expression and type [](http://api.gmath.guru/cgi-bin/gmath?y_%7B1%7D%5Csim%20a(b)%5E%7Bx_%7B1%7D%7D) This will graph the exponential curve of best fit (exponential regression) and give you the values of *a* and *b* for your equation.

**Practice:** Find the depreciation amounts for your project vehicle and calculate the value of the vehicle after each year. Then, create a table using Desmos to graph the points and find the exponential regression equation.