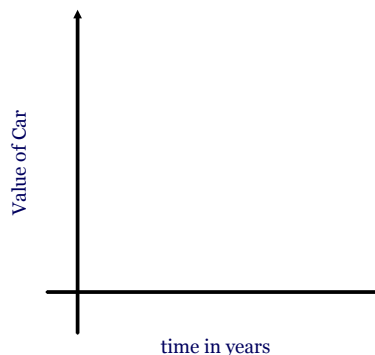




5.2: Exponential Decay

Consider a car is said to lose about 6.5% of its value each year. If a car is purchased for \$23,620.

Recursive Sequence:



Which functions represent exponential growth and which represent exponential decay? Find the rate of growth/decay and the growth/decay factor for each.

$$a) y = 5(2)^x$$

$$b) y = 100(0.5)^x$$

$$c) y = 80(1.3)^x$$

$$d) y = 20(0.8)^x$$

$$e) y = 20(1 + 0.025)^x$$

$$f) y = 40(1 - 0.4)^x$$



During the economic recession which started in 2008, CNN reported that property values were declining at rates as high as 18% annually through 2012. Find the value of the properties below in 2012 if their value in 2008 is listed below.

Home 1: \$248,940

Home 2: \$563,500

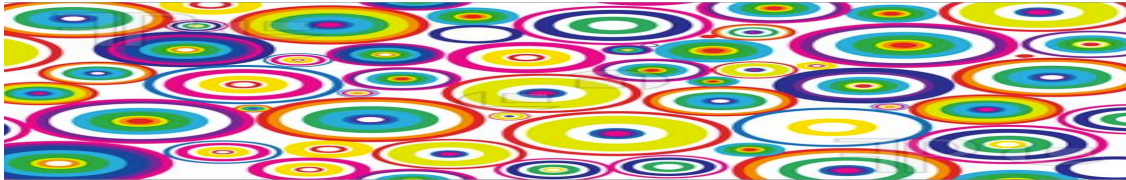
In 2014 the housing market began to rebound. If property values increased at an annual rate of 5.3%, how many years would it take before the two houses were back at their original values?

Home 1:

Original Value: \$248,940 Value in 2012: _____

Home 2:

Original Value: \$563,500 Value in 2012: _____



According to <http://population.us/sc/charleston/> the population in Charleston, SC grew exponentially from 90,620 people in 1990 to 120,083 people in 2010. Write a function to model Charleston's population from 1990 to 2010 assuming the population grew at a **constant growth rate** during that time period where P (population) is a function of time, t , (where t represents the years since 1990).

Using the model you found from the last problem answer the following questions.

1. What will the population of Charleston be in 2016?

2. When will the population of Charleston reach 180,000 people assuming it continues to grow at this rate?