Algebra 2 Honors **Name**_____
Notes: 4.1 **Date**_____**Block**_____

I. Exponential Function

$$f(x) = b^x, \text{ where } b > 0, b \neq 1$$

Domain: Range:

Horizontal Asymptote:

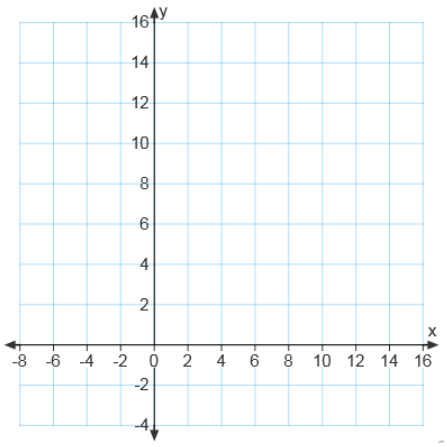
Exponential Growth:

Exponential Decay:

II. Graphing Exponential Functions

Key Points:

Example 1A: Tell whether the function shows growth or decay. Then graph. Show your table of values. $f(x) = 10\left(\frac{3}{4}\right)^x$

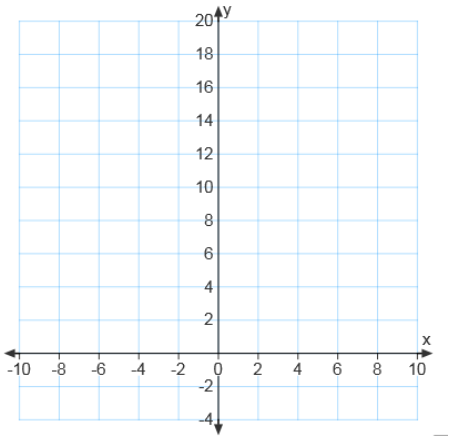


Example 1B: Tell whether the function shows growth or decay. Then graph. Show your table of values.

$f(x) = 100(1.05)^x$

Check it out! Example 1: Tell whether the function shows growth or decay. Then graph. Show your table of values.

$f(x) = 5(1.2)^x$



III. Modeling Exponential Growth and Decay

$$A(t) = a(1 \pm r)^t$$

Example 2: Clara invests $5000 in an account that pays 6.25% interest per year. After how many years will her investment be worth $10,000?

Check it out! Example 2: In 1981, the Australian humpback whale population was 350 and increased at a rate of 14% each year since then. Write a function to model population growth. Use a graph to predict when the population will reach 20,000.

Example 3: A city population, which was initially 15,500, has been dropping 3% a year. Write an exponential function and graph the function. Use the graph to predict when the population will drop below 8000.