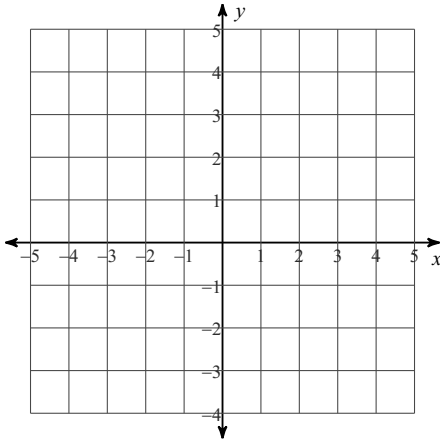


SM3-A HW #12-13 (Review the Exponential Function)

- 1) Draw the shape of a graph that represents exponential growth.



- 2) The parent function of all exponential functions is given by:

$$y = b^x$$

- a) Use interval notation to write the values that 'b' can take on for exponential growth.
b) Use interval notation to write the values that 'b' can take on for exponential decay.

- 3) For the following, specific, exponential function: $y = 2^x + 3$

- a) What is the equation for the horizontal asymptote for the exponential function?
b) What is the domain of the exponential function?
c) What is the range of the exponential function?
d) What is the y-intercept of the function?

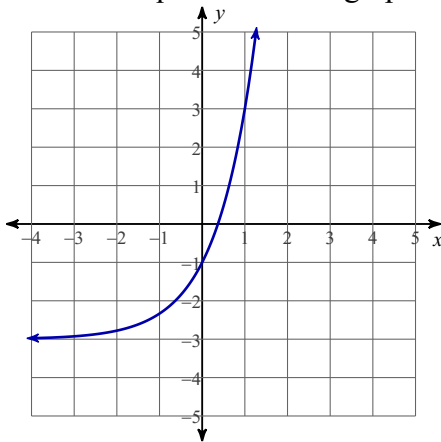
- 4) An exponential function has the following equation: $y = 2^x$

- a) Write the equation if it has been moved up 3.
b) Write the equation if it has been reflected across the y-axis.
c) Write the equation if it has been moved down 4 and has been vertically stretched by a factor of 3.

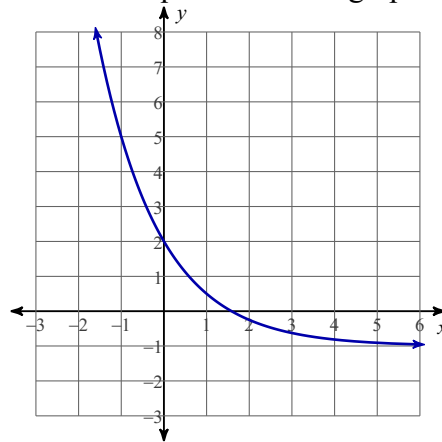
5) $y = 2 \cdot \left(\frac{1}{3}\right)^x + 5$

- a) What is the horizontal asymptote?
- b) What is the y-intercept?
- c) Is the function growth or decay?
- d) What is the growth factor?
- e) What is the domain?
- f) What is the range?

6) Write the equation for the graph.



7) Write the equation for the graph.



8) Which functions have inflection points?

9) Which functions have a vertex?

10) Which function has an endpoint?

11) The equation that models the cooldown of a cup of hot chocolate (temperature in F, and time in minutes) is given by:

$$T(t) = 105(0.92^t) + 65$$

- a) What is the initial temperature of the hot chocolate? Hint: $T(0) = ?$
- b) What is the room temperature?
- c) What will be the temperature in 6 minutes?
- d) When will the temperature be 90 F ?

12) A hot bowl of soup (at 170 F) is placed on the counter in a room that is at 50 F. In 5 minutes the soup has cooled to 100 F.

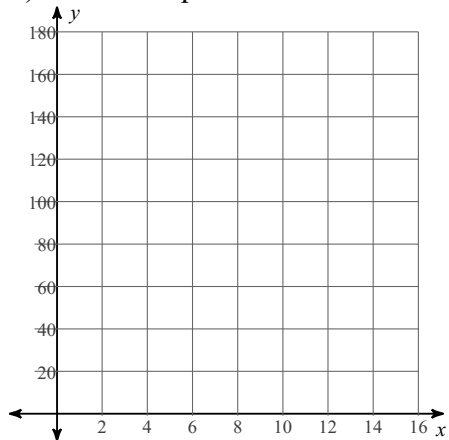
a) Draw the graph that models the cooldown of the soup.

(1) Label the x, and y-axis with the quantity and unit of measure.

(2) Show the horizontal asymptote

(3) Plot the points given in the problem and label their values (two points)

b) Find the equation that models this situation.



13) A hot piece of metal has been taken out of a furnace (at 900 F) and placed in an oil bath that is 200 F. In 6 minutes the metal has cooled to 400 F.

a) Draw the graph that models the cooldown of the metal.

(1) Label the x, and y-axis with the quantity and unit of measure.

(2) Show the horizontal asymptote

(3) Plot the points given in the problem and label their values (two points)

b) Using the 3-step method we have learned, find the equation that models this situation.

