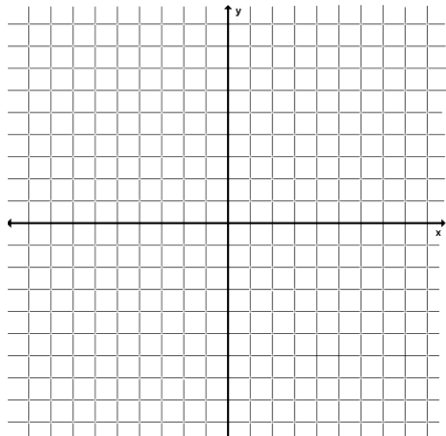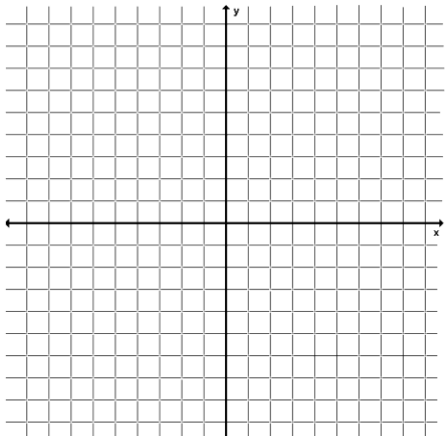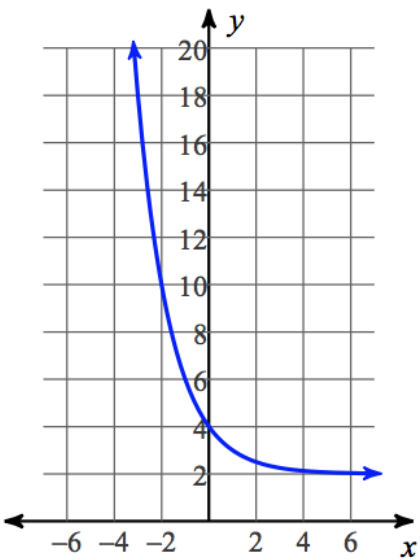# 7.1 - Exponential Functions Sample Problems

A. Make a table of values and graph precisely

$y = 6\left(\frac{1}{3}\right)^x$

$y = -2^x$

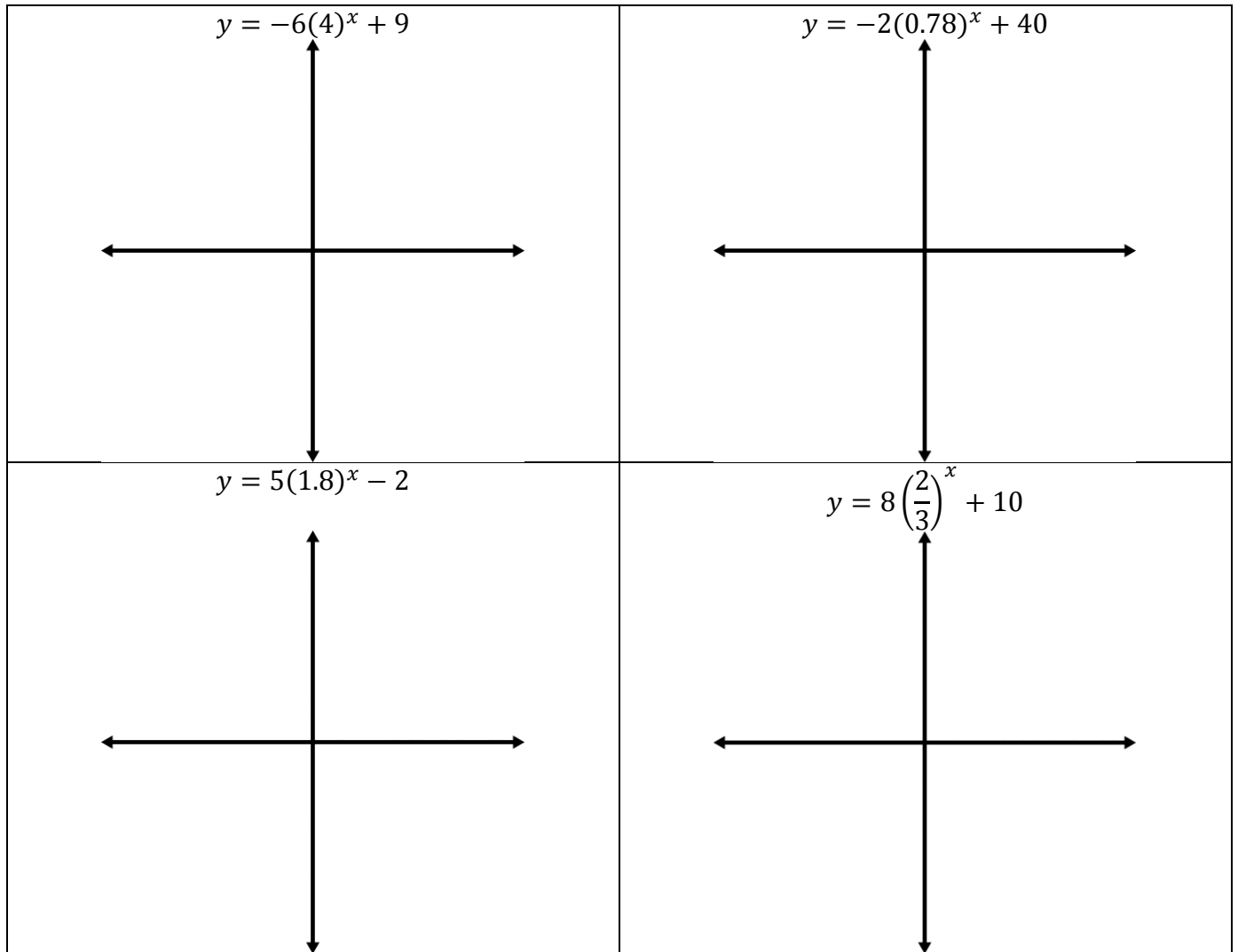B. Analyze the following exponential function: $y = 2\left(\frac{1}{2}\right)^x + 2$

	Domain Range Increasing or Decreasing Positive or Negative End Behavior: Using the graph, __estimate__ the solution to the following equations: $2\left(\frac{1}{2}\right)^x + 2 = 14$ $\qquad\qquad\qquad$ $2\left(\frac{1}{2}\right)^x + 2 = 8$

C. Write a function equation that correctly models each description, then answer the question.

Let x = the number of hours since 2 pm and y = the number of bacteria in a sample.

At 2 pm, the population in the sample is 700. It increases by 200 bacteria every hour. How many bacteria will be in the sample at 11 pm?	At 2 pm, the population in the sample is 1000. It triples every hour. How many bacteria will be in the sample at 5 pm?
At 2 pm, the population of the sample was 300. The population decreases by 31% each hour. How many bacteria will be in the sample at midnight?	At 2 pm, the population of the sample was 900. The population increases by 7.2% each hour. How many bacteria will be in the sample at 8 pm?

D. <u>Sketch</u> the graphs of the following functions. Label the <u>asymptote and y-intercept</u> and make sure that the <u>general shape and end behavior</u> are correctly drawn:

$y = -6(4)^x + 9$	$y = -2(0.78)^x + 40$
$y = 5(1.8)^x - 2$	$y = 8\left(\dfrac{2}{3}\right)^x + 10$

E. Solve by creating common bases

$2^x \cdot 2^{x-5} = 8^{2x+1}$	$\left(\dfrac{1}{3}\right)^x = 3^{x+1} \cdot 9^x$