Exponential Functions - Day 1 Homework

Growth & Decay

Name _______________________
Date ________________ Block____

1. All exponential functions are in the form \( y = a(b)^x \).
   a. What values of \( b \) make it an exponential growth function? ________________
   b. What values of \( b \) make it an exponential decay function? ________________

2a. Sketch an exponential growth function.  b. Sketch an exponential decay function.

3. Label each function as either exponential growth or exponential decay.
   a. ________________  b. ________________  c. ________________

   ![Graphs of exponential functions]

4. Label each function as either exponential growth or exponential decay.
   a. ________________  b. ________________  c. ________________
   
   \[ y = 2.4(3)^x \]  \[ y = 7(.98)^x \]  \[ y = 1.9\left(\frac{5}{2}\right)^x \]

   d. ________________  e. ________________  f. ________________
   
   \[ y = 75(1.45)^x + 2 \]  \[ y = 4\left(\frac{2}{7}\right)^x \]  \[ y = 250\left(\frac{1}{9}\right)^x - 3 \]
5. Given the equation \( y = 35(0.57)^x \)
   a. Does this equation represent growth or decay? 
   b. What is the growth or decay factor?
   c. What is the rate of growth or decay?
   d. What is the initial value?

6. Given the equation \( y = 1.3^x \)
   a. Does this equation represent growth or decay?
   b. What is the growth or decay factor?
   c. What is the rate of growth or decay?
   d. What is the initial value?

7. Given the equation \( y = 1.4(1.03)^x \)
   a. Does this equation represent growth or decay?
   b. What is the growth or decay factor?
   c. What is the rate of growth or decay?
   d. What is the initial value?
8. \( y = 16(0.75)^x \)
   
a. Does this equation represent growth or decay? 

   b. What is the growth or decay factor? 

   c. What is the rate of growth or decay? 

   d. What is the initial value?

9. \( y = 4.5(0.95)^x \)
   
a. Does this equation represent growth or decay? 

   b. What is the growth or decay factor? 

   c. What is the rate of growth or decay? 

   d. What is the initial value?

10. \( y = 8(3)^x \)
    
a. Does this equation represent growth or decay? 

    b. What is the growth or decay factor? 

    c. What is the rate of growth or decay? 

    d. What is the initial value?