

## Integrated Math II Study Guide: Exponents and Exponential Functions

Simplify the following expressions.

1.)  $(2x)^0$

4.)  $(2xy^3)^2$

2.)  $\frac{x^{-3}}{y^{-2}}$

5.)  $\frac{x^7}{x^2}$

3.)  $2x^5 \cdot 3x^4$

6.)  $\left(\frac{2x^3y^{-2}}{3x^{-3}y^0}\right)^2$

- a.) State whether the function is growth or decay.      b.) State the asymptote.  
 c.) State the domain and range.      d.) State all transformations from the parent graph.  
 e.) Graph the function.      f.) Fill in the empty boxes.

7.)  $f(x) = 2 \cdot 2^{x-3} + 4$

Parent function:

Helper points:

Growth or decay? \_\_\_\_\_

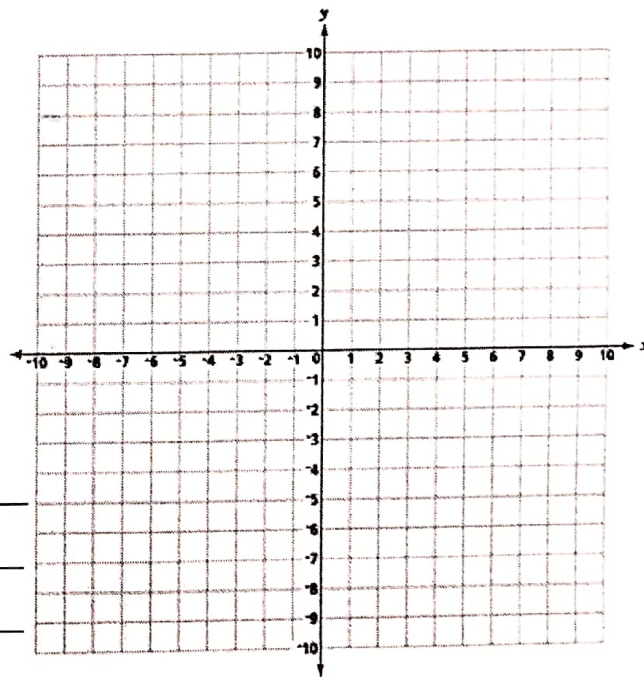
Asymptote: \_\_\_\_\_

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Transformations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



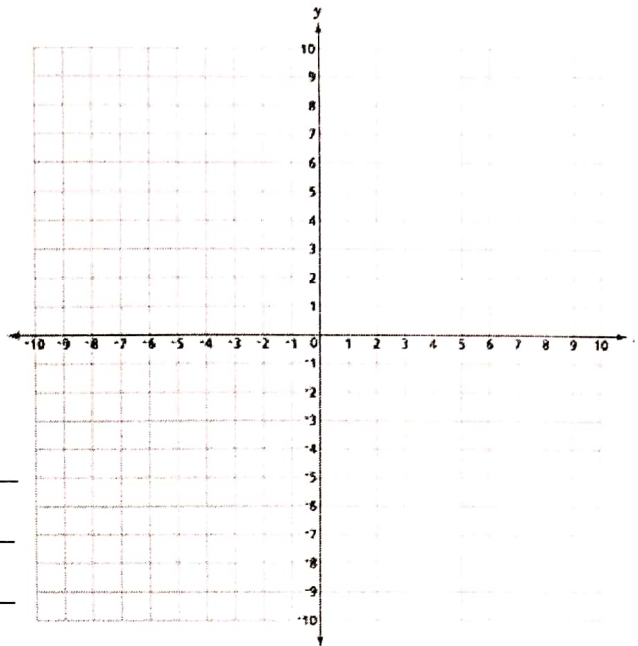
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8.)  $f(x) = -\left(\frac{1}{2}\right)^{x+4} + 5$

Parent function:

Helper points:



Growth or decay? \_\_\_\_\_

Asymptote: \_\_\_\_\_

Domain: \_\_\_\_\_ Range: \_\_\_\_\_

Transformations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9.) I bought a car for \$25,000, but its value is depreciating at a rate of 10% per year. How much will my car be worth after 8 years?

10.) The mice population is 25,000 and is decreasing by 20% each year. Write a model for this situation. What will be the mice population after 3 years?

11.) You invest \$10,000 in an account with 1.250% interest, compounded quarterly. Assume you don't touch the money or add money other than the earned interest.

- a) Write an equation that gives the amount of money,  $y$ , in the account after  $x$  years.
- b) How much money will you have in the account after 10 years?
- c) How much money will you have in the account after 25 years?

12.) The Franklins inherited \$15,000, which they want to invest for their child's future college expenses. If they invest it at 3.25% with interest compounded monthly, determine the value of the account, in dollars, after 5 years.