

Name _____

Date _____

Advanced Algebra

Unit 3: Exponential, Log, and Power Functions

Homework #5

Solve the following for x:

1) $x^5=50$	2) $\sqrt[3]{x} = 3.1$	3) $x^2=121$
4) $x^{.75}=10$	5) $x^{4.6}=12$	6) $x^{-3.1}=.5$

Simplify the following. Do not leave negative exponents.

1) $\frac{r^2}{2r^3}$	2) $(4a^3)^2$	3) $4a^3b^2 \cdot 3a^{-4}b^{-3}$
4) $\frac{4m^4n^3p^3}{3m^2n^2p^4}$	5) $\frac{2x^4y^{-4}z^{-3}}{3x^2y^{-3}z^4}$	

Let $f(x) = 2^x + 5$ and $g(x) = 2(x+1)$

- 1) Where is the asymptote of $f(x)$?
- 2) What is $f(g(x))$?
- 3) What is $g(f(x))$?

Write the following expressions in expanded form and simplified form:

Exponent Form	Expanded Form	Simplified form (No negative exponents!)
$m^3 * m^5$		
$\frac{(3m)^3 * n^5}{-2n^0}$		
$\frac{m^{-3}m^5}{2m}$		
$\frac{(m^2 * n^2)^3}{(n^{-2})^{-2}}$		

A zombie outbreak is threatening the nation. The initial number of infected persons is unknown, but it is known that 7 days after the outbreak there are an estimated 115,000 zombie related deaths, and 10 days after there are about 1,797,000. It is not known if it is growing at a linear or exponential rate.

a) Fill in the table assuming both are true

Days	Zombie/deaths
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Days	Zombie/deaths
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

b) What day will the number of zombies break the billion mark?