SM3 HW #5-3 (Exponential Function)

Date_____ Period____

1) a) Write the vertex form equation. (Show all of your work.)
b) Find the zeroes of the equation.

$y = x^2 - 6x + 11$

2) $y = 5x^2 + 3x - 8$

a) Convert to intercept form.

b) Find the zeroes.

3) Find the equation of a line that passes through: $(-3, -5)$ and $(5, -4)$

4) Simplify
$\frac{6x}{6} - \frac{6}{4x}$

5) $\frac{\frac{4x}{3}}{\frac{9}{x^2}}$

6) A saline solution was made by mixing 3 qt. of a 10% saline solution and 2 qt. of a 55% saline solution. Find the concentration of the new mixture.

7) $f(x) = \frac{6x + 2}{x - 1}$

a) Wrtie the equation as the reciprocal function.
b) Vertical Asymptote?
c) Horizontal Asymptote?
d) x-intercept?
e) y-intercept?

8) Perform the indicated operation;
$g(a) = 3a + 5$
$f(a) = 2a + 3$
Find $(g \circ f)(-7)$

9) $g(x) = (x + 1)^3 - 3$

$g^{-1}(x) = ?$

10) Solve. Show either your table or a graph with signs (+/-), then write the solution in interval notation:

$4x(5x-1)(x+3)<0$

11) Solve the equation:

$$\frac{4}{n}=\frac{1}{2n}-\frac{1}{2}$$

12) Rewrite in exponential form.

$\left(\sqrt[3]{3x^2}\right)^4$

13) Rewrite in radical form.

$(6x)^{\frac{4}{3}}$

14) Simplify. Your answers should not have any negative exponents.

$3xy^{-3}\cdot 4x^{\frac{3}{2}}$

15) Simplify

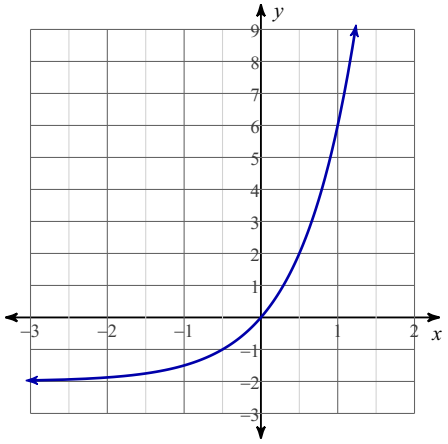
$\left(m^2n^{\frac{3}{4}}\right)^{\frac{3}{2}}$

16) Simplify

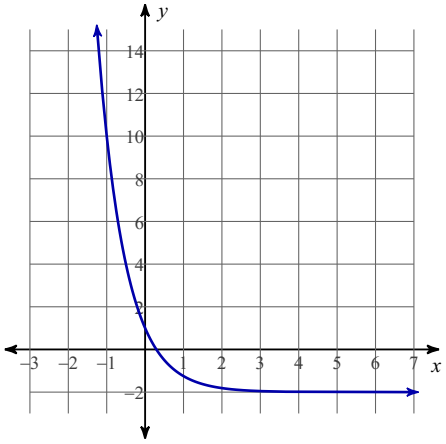
$\sqrt{15}(3-\sqrt{6})$

17) $\sqrt{96x^2y^4}$

18) Write the eqaution for the graph. The graph passes through the ordered pairs (0, 0) and (1, 6)



19) Write the eqaution for the graph. The graph passes through the ordered pairs (0, 1) and (-1, 10)



20) a) Describe the transformation of the parent function $y = \left(\frac{1}{4}\right)^x$ given by the equaiton $g(x) = 2 \cdot \left(\frac{1}{4}\right)^x + 3$

b) what is the horizontal asymptote?

c) what is the domain?

d) what is the range?

e) What is the "growth factor"?

f) what is the y-intercept?

g) is the function "growth" or "decay"?