

SM3-A HW #6-3 (Review)

1) Write the equation of a line that passes through: $(5, -1)$ and $(-5, -2)$

2) a) What is the domain?

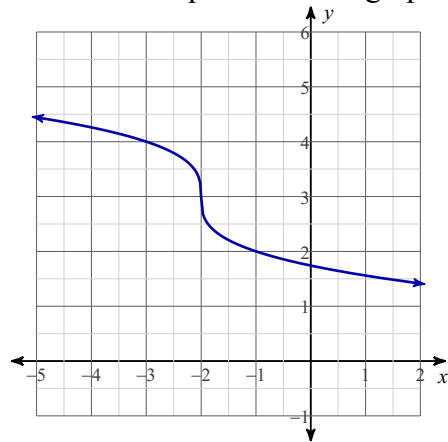
b) What is the range?

$$y = 4 + 2\sqrt{x - 3}$$

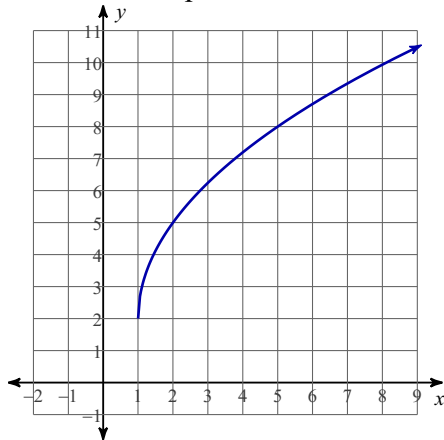
3) a) What is the vertex of the graph of the following function?
 b) What is the domain of the function?
 c) What is the range of the function?

$$f(x) = -2|x + 1| - 3$$

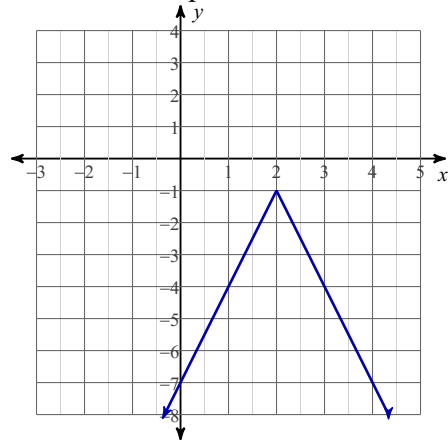
4) What is the equation of the graph?



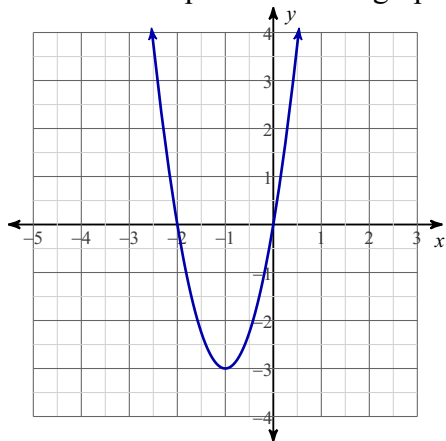
5) What is the equation?



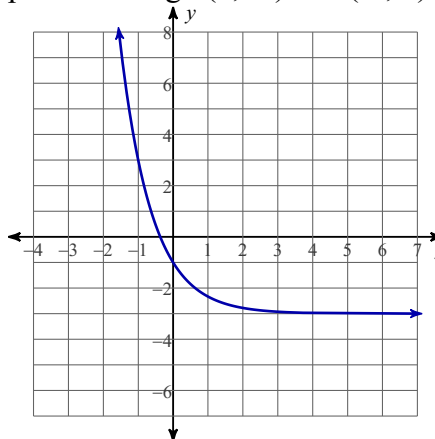
6) What is the equation?



7) What is the equation for the graph?



8) Write the equation that has been graphed. It passes through (0, -1) and (-1, 3)



9) Parent function: $f(x) = \left(\frac{1}{3}\right)^x$

Transformation of $f(x)$: $g(x) = 2 \cdot \left(\frac{1}{3}\right)^x - 4$

a) What is the range of $g(x)$?

b) What is the horizontal asymptote of $g(x)$?

c) What is the growth factor of $g(x)$?

d) Is $g(x)$ growth or decay?

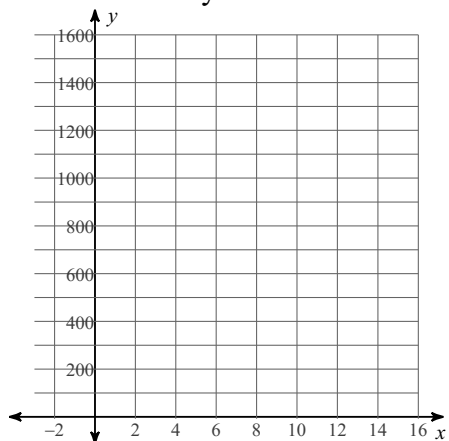
e) Describe in words how $g(x)$ transforms $f(x)$

10) \$750 is placed into a bank account that pays 3.5% annual interest compounded quarterly. How much money will be in the account in 8 years?

11) \$500 is placed into a bank account that pays 6.5% annual interest compounded monthly. How much money will be in the account in 6 years?

- 12) A small piece of iron was taken from a blast furnace and immediately placed into an oil bath to cool. When the metal was taken out of the furnace, its temperature was 1400 F. The oil bath temperature is 150 F. After 4 minutes, the temperature of the metal was 700 F.

- a) Draw a graphical representation of the relationship between the quantities involved in this problem. Ensure that your graph is correctly labeled.
 b) What is the equation representing the relationship between the two quantities. Round the base of your exponential to 2nd decimal place. Make sure to write your equation in "function notation" using "T" for temperature and "t" for time.
 c) Using your equation, determine the temperature of the metal 8 minutes after it was placed in the oil bath. Write your answer to the nearest 1/10 of a degree F.



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

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

- 14) Find the zeroes.

$$y = -2(x - 5)^2 + 48$$

Simplify each expression.

15) $\frac{3x}{6} - \frac{x-6}{x-5}$

16) $\frac{\frac{x-3}{x^2}}{\frac{x^2}{2}}$

Simplify each and state the excluded values.

17) $\frac{4x^2 + 20x - 24}{2x^3 + 8x^2 - 24x}$

18) $\frac{n^2 - n - 2}{7n^2 - 7n - 14}$

Solve each question. Round your answer to the nearest hundredth.

19) Working alone, it takes Paul 15 minutes to inflate twenty balloons. Maria can inflate the same twenty balloons in 12 minutes. If they worked together how long would it take them?

20) 2 fl. oz. of a 90% saline solution was mixed with 8 fl. oz. of pure water. Find the concentration of the new mixture.

Perform the indicated operation.

21) $f(x) = -4x + 2$
 $g(x) = 4x - 5$
Find $(4f + 3g)(x)$

22) $g(x) = 4x - 3$
 $f(x) = x^2 - 2$
Find $(2g - 5f)(1)$

23) $g(n) = n^3 - n^2$
 $h(n) = 4n - 2$
Find $(g \circ h)(n)$

24) $g(a) = 2a - 3$
 $f(a) = a^2 - 5a$
Find $(g \circ f)(1)$