

1. The equation  $s=2\sqrt{5x}$  can be used to estimate the speed,  $s$ , of a car in miles per hour, given the length in feet,  $x$ , of the tire marks it leaves on the ground. A car traveling at a speed of 90 miles per hour came to a sudden stop. According to the equation, how long would the tire marks be for this car?

- A. 355 feet
- B. 380 feet
- C. 405 feet
- D. 430 feet

$1) 90 = 2\sqrt{5x}$   
 $2) 45 = \sqrt{5x}$   
 $4^2$   
 $2025 = 5x$   
 $405 = x$

2. Find the vertex of  $y = (x - 3)^2 - 2$

$(3, -2)$

3. Find the domain and range, and increasing/decreasing intervals of each:

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

$D: [2, \infty)$   
 $R: [3, \infty)$

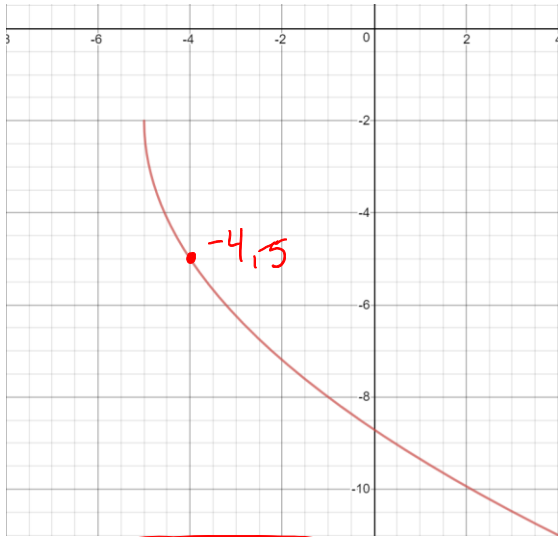
b.  $y = \frac{2}{x-4} - 3$

$D: (-\infty, 4) \cup (4, \infty)$   
 $R: (-\infty, -3) \cup (-3, \infty)$

c.  $y = \frac{-4}{x+9} + 1$

$D: (-\infty, -9) \cup (-9, \infty)$   
 $R: (-\infty, 1) \cup (1, \infty)$

4. Write an equation for the following



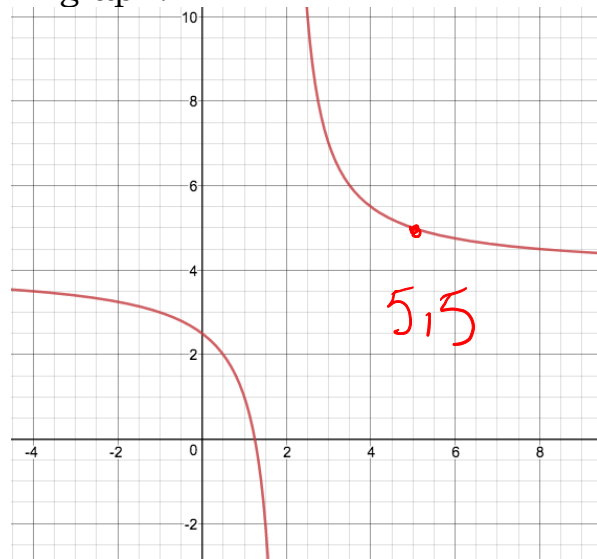
$y = -3\sqrt{x+5} - 2$

$-5 = -9\sqrt{-4+5} - 2$

$-5 = -a - 2$

$-3 = -a$   
 $a = 3$

5. Write an equation for the following graph.



$y = \frac{a}{x-2} + 4$

$5 = \frac{a}{5-2} + 4$

$5 = \frac{a}{3} + 4$

6. Write the equation of the square root function that is compressed vertically by a factor of  $\frac{1}{3}$ , shifted up 9, and left 2.

7. Write the equation of a reciprocal function (inverse variation) that is compressed vertically by a factor of  $\frac{2}{3}$ , translated left 4 and down 6.

Find each of the following, using PROPER NOTATION:

8.  $y = 2x^2 + 1$  Transformations: \_\_\_\_\_

9.  $y = -3\sqrt{x}$  Domain: \_\_\_\_\_

10.  $y = 0.5\sqrt{x+2} - 5$  End Behavior: \_\_\_\_\_

11.  $y = \frac{-2}{x} - 3$  Increasing Interval: \_\_\_\_\_

12.  $y = \frac{10}{x+8}$  Range: \_\_\_\_\_

13.  $y = 0.3(x-5)^2 + 2$  Vertex: \_\_\_\_\_

14.  $y = \frac{5}{6x} - 1$  Transformations: \_\_\_\_\_

15.  $y = -\sqrt{x+7} + 3$  Decreasing Interval: \_\_\_\_\_

16.  $y = \sqrt{x} - 5$  y-intercept: \_\_\_\_\_

17.  $y = \frac{3}{4(x+1)}$  Transformations: \_\_\_\_\_

18.  $y = \frac{2}{x} + 7$  Vertical Asymptote: \_\_\_\_\_

19.  $y = -\frac{1}{x+4}$  End Behavior: \_\_\_\_\_

20.  $y = \frac{-2}{x} - 3$  Horizontal Asymptote: \_\_\_\_\_

21.  $y = .5\sqrt{x+1} - 8$  Range: \_\_\_\_\_

22.  $y = 0.3(x+1)^2 - 10$  Vertex: \_\_\_\_\_

23.  $y = -\sqrt{x+2} - 7$  Transformations: \_\_\_\_\_

24.  $y = \frac{1}{x+3} + 8$  Decreasing Interval: \_\_\_\_\_

25.  $y = 6(x-2)^2 - 8$  y-intercept: \_\_\_\_\_