

7. Direct or Inverse?

a.  $d = 4c$

direct

b.  $e = \frac{4}{f}$

Inverse

c.  $g = \frac{1}{3}h$

Inverse

8. The number of revolutions made by a tire traveling over a fixed distance varies inversely to the radius of the tire. A 12-inch radius tire makes 100 revolutions to travel a certain distance. How many revolutions would a 16-inch radius tire require to travel the same distance?

$y = \frac{k}{x}$

$12 = \frac{k}{100}$

$k = 1200$

$16 = \frac{1200}{x}$

$16x = 1200$

$x = 200$   
revolutions

9. The time needed to paint a fence varies directly with the length of the fence and inversely with the number of painters. If it takes five hours to paint 200 feet of fence with three painters how long will it take five painters to paint 500 feet of fence?

SKIP

10. Solve.

a.  $\frac{3}{n-2} = \frac{n}{5}$

$x = 5 \checkmark$

b.  $\frac{x+3}{1} = \frac{10}{x}$

$x = -5 \checkmark$   
 $x = 2 \checkmark$

$15 = n^2 - 2n$   
 $0 = n^2 - 2n - 15$   
 $0 = (n-5)(n+3)$

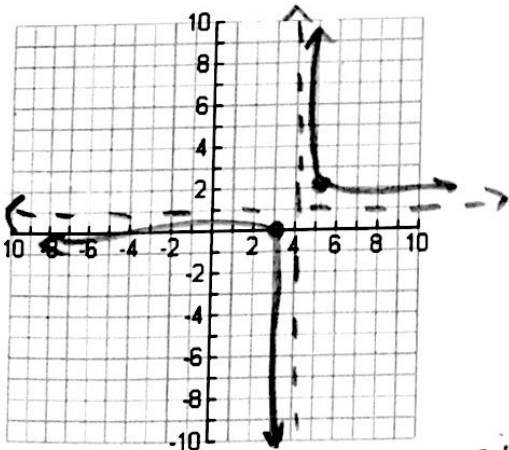
$x = -3 \checkmark$

$10 = x^2 + 3x$   
 $0 = x^2 + 3x - 10$   
 $0 = (x+5)(x-2)$

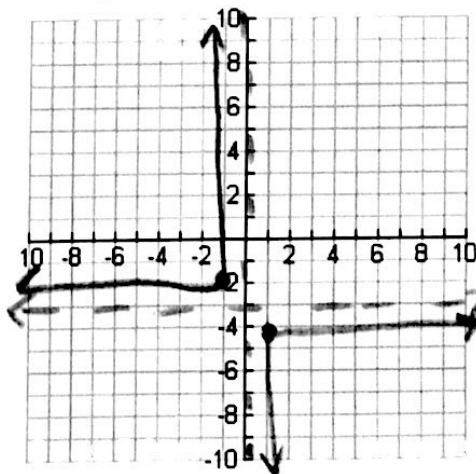
11. Graph. State the transformations in order. State the Domain and Range.

a)  $y = \frac{1}{x-4} + 1$

b)  $y = -\frac{1}{x} - 3$



Right 4  
UP 1  
Domain  $x \neq 4$   
Range  $y \neq 1$



Reflect in x-axis  
Down 3

Domain  $x \neq 0$   
Range  $y \neq -3$

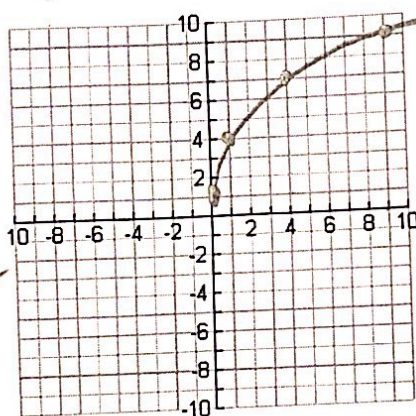
## Radical and Rationals Review #1!

1. A radical expression can be written as a rational exponent, and vice versa.

✓ a.  $\sqrt[3]{x}$   $x^{1/3}$  ✓ b.  $y^{4/5}$   $\sqrt[5]{y^4}$

2. Graph. State the transformations in order. State the Domain and Range.

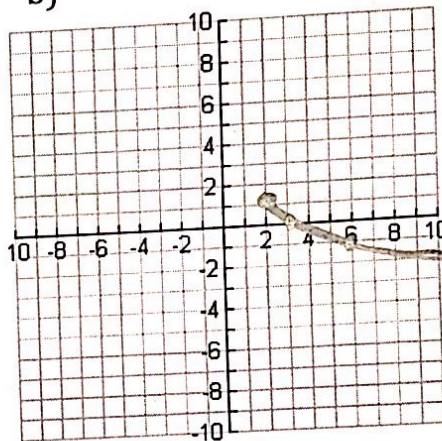
✓ a)  $y = 3\sqrt{x} + 1$



Stretch by 3  
Up 1

$3x \rightarrow 1$   
 $6x \rightarrow 4$   
 $9x \rightarrow 9$

b)  $y = -\sqrt{x-2} + 1$



Reflect over x  
Right 2  
Up 1

3. Working backwards: Writing the equation when given a translation.

✓ a) The parent function  $y = \sqrt{x}$  is translated 2 units to the left and one unit down.

$y = \sqrt{x+2} - 1$

✓ b) The parent function  $y = \sqrt{x}$  is translated 3 units to the right.

$y = \sqrt{x-3}$

4. Solve each radical equation.

✓ e)  $\sqrt{3x-1} = \sqrt{2x+4}$

$3x-1 = 2x+4$

$x-1 = 4$

$x = 5$

✓ f)  $\sqrt{6x-5} = x$

$6x-5 = x^2$

$0 = x^2 - 6x + 5$

$0 = (x-5)(x-1)$

$x = 5, 1$

✓ g)  $5\sqrt{x+7} = 25$

$\sqrt{x+7} = 5$

$x+7 = 25$

$x = 18$

5. Y varies directly with x. If  $y = -6$  when  $x = 2$ , find y when  $x = -4$ .

$y = kx$   $k = y/x$

$-6/2 = -3$

$y = -3(-4) = 12$

✓ 6. Y varies inversely with x. If  $y = 30$  when  $x = 15$ , find x when  $y = -5$ .

$y = \frac{k}{x}$   $k = yx$

$k = 30(15)$   
 $k = 450$

$-5 = \frac{450}{x}$

$-5x = 450$

$x = -90$