AN ADULT FEMALE'S HEIGHT CAN BE APPROXIMATED BY THE SQUARE ROOT OF THE PRODUCT OF 23 AND THE LENGTH OF THEIR FOREARM.

$h = \sqrt{23 \cdot F}$

A) ABOUT HOW TALL IS A WOMAN WHOSE FOREARM IS 1.4 FT LONG?

$h = \sqrt{23 \cdot 1.4}$

$h = \sqrt{32.2} = 5.67$ ft

$.67(12) = 8$"

5' 8"

B) ABOUT HOW LONG IS A WOMAN'S FOREARM IS SHE IS 5'3" TALL?

$5'3" = \sqrt{23F}$

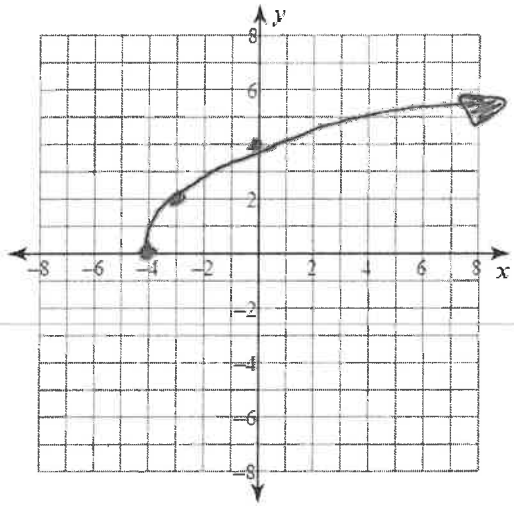
$\frac{3}{12} = .25$ ft

$5.25 = \sqrt{23F}$

$\frac{27.5625}{23} = \frac{23F}{23}$

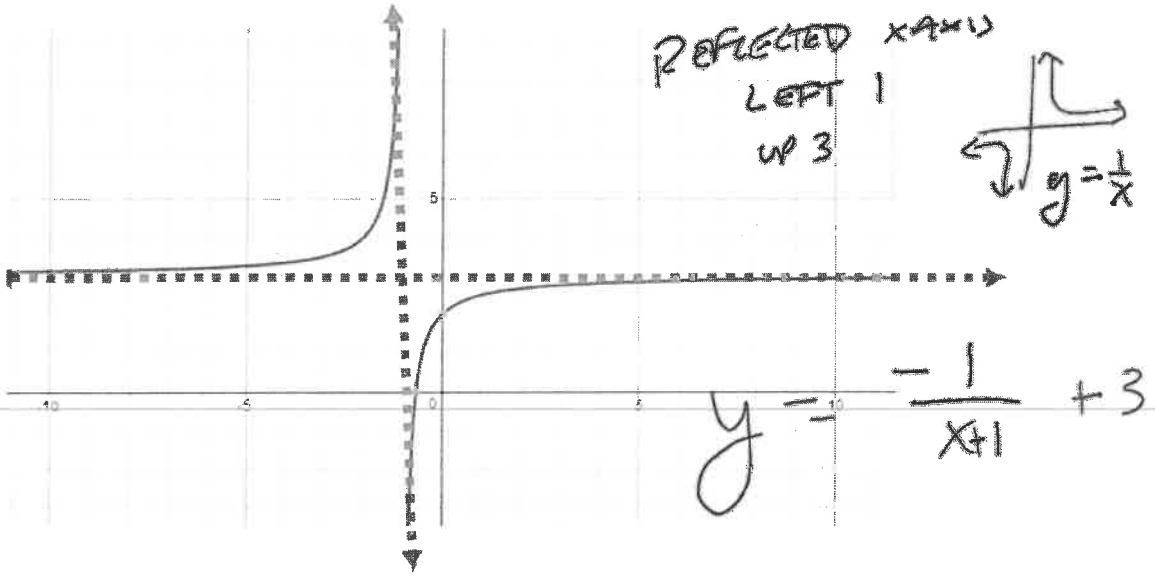
$f = 1.2$ ft

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

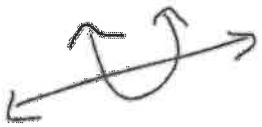


LEFT 4

VERTICAL STRETCH of 2

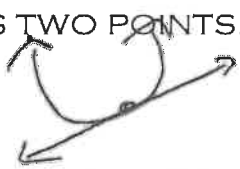

REFLECTED x-axis
LEFT 1
UP 3
$y = \frac{1}{x}$
$y = -\frac{1}{x+1} + 3$

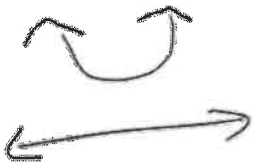
ALWAYS, SOMETIMES, OR NEVER



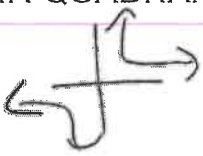
- THE SOLUTION OF A SYSTEM OF EQUATIONS WITH A LINEAR AND AN QUADRATIC FUNCTION IS TWO POINTS.

SOMETIMES





- THE PARENT FUNCTION OF THE INVERSE VARIATION FUNCTION LIES IN QUADRANTS 1 AND 4.



3

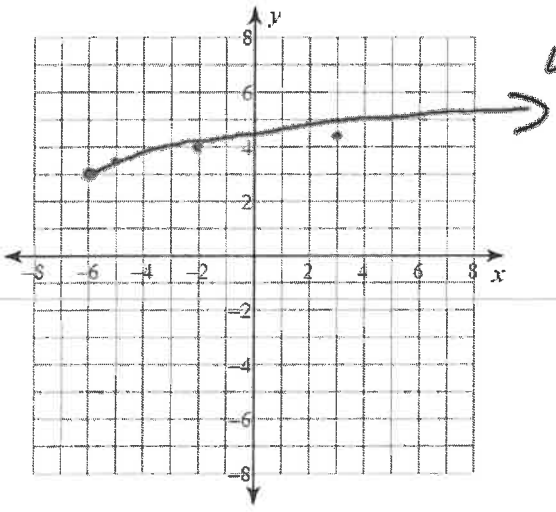
NEVER

$$y = \frac{1}{2}\sqrt{x+6} + 3$$

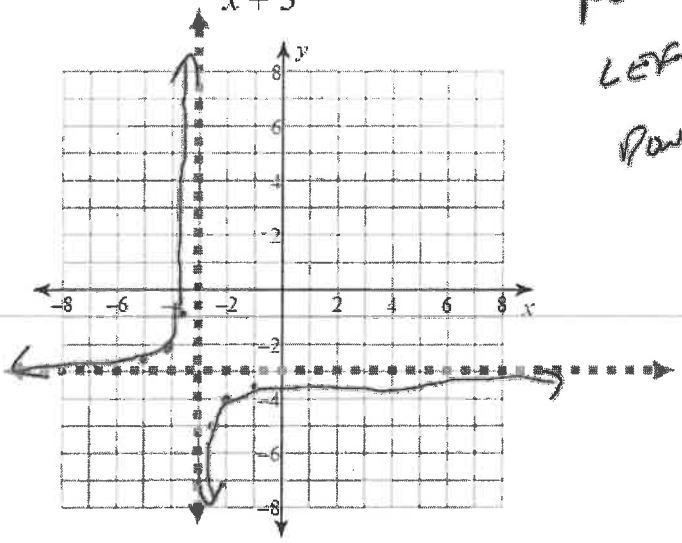
Compression of $\frac{1}{2}$

LEFT 6

UP 3



$$f(x) = -\frac{1}{x+3} - 3$$



REFLECT X AXIS

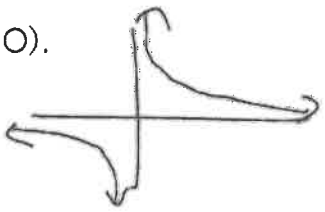
LEFT 3

DOWN 3

ALWAYS, SOMETIMES, OR NEVER

- EVERY PARENT GRAPH PASSES THROUGH (0,0).

NEVER $y = \frac{1}{x}$ DOES NOT



- INVERSE VARIATION FUNCTIONS CAN GO THROUGH (0,0)

SOMETIMES $y = \frac{1}{x+1} - 1$

SOLVE THE SYSTEM

$F(x) = 2x - 1$

$G(x) = \sqrt{x + 1}$

$(2x-1)^2 = (\sqrt{x+1})^2$

$(2x-1)(2x-1) = x+1$

GCF

$4x^2 - 4x + 1 = x + 1$

$-x \quad -1 \quad -x \quad -1$

QUAD $= 0$

$4x^2 - 5x = 0$

$x(4x-5) = 0$

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

$-1 = \sqrt{1}$

$-1 \neq 1$

~~$x = 0$~~

$4x - 5 = 0$

$x = \frac{5}{4}$

$2(\frac{5}{4}) - 1 \stackrel{?}{=} \sqrt{\frac{5}{4} + 1}$

$\frac{10}{4} - 1 \stackrel{?}{=} \sqrt{\frac{9}{4}}$

$\frac{3}{2} = \frac{3}{2}$

$\sqrt{\frac{5}{4} + \frac{4}{4}}$

$\sqrt{\frac{9}{4}}$

$\frac{\sqrt{9}}{\sqrt{4}} = \frac{3}{2}$

$$\sqrt{-9-2n}^{2} = \sqrt{2n+27}^{2}$$

$-9-2n = 2n+27$

$+2n \quad +2n$

$-9 = 4n+27$

$-27 \quad -27$

$-36 = 4n$

$n = -9$

$(x+2)^2 = \sqrt{4-x}^2$

$(x+2)(x+2)$

$x^2+4x+4 = 4-x$

$+x \quad -4 \quad -4+x$

$x^2+5x=0$ GCF

$x(x+5)=0$

$x=0$ $\quad x+5=0$

$x=-5$

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

$0+2 \stackrel{?}{=} \sqrt{4-0}$

$2=2$

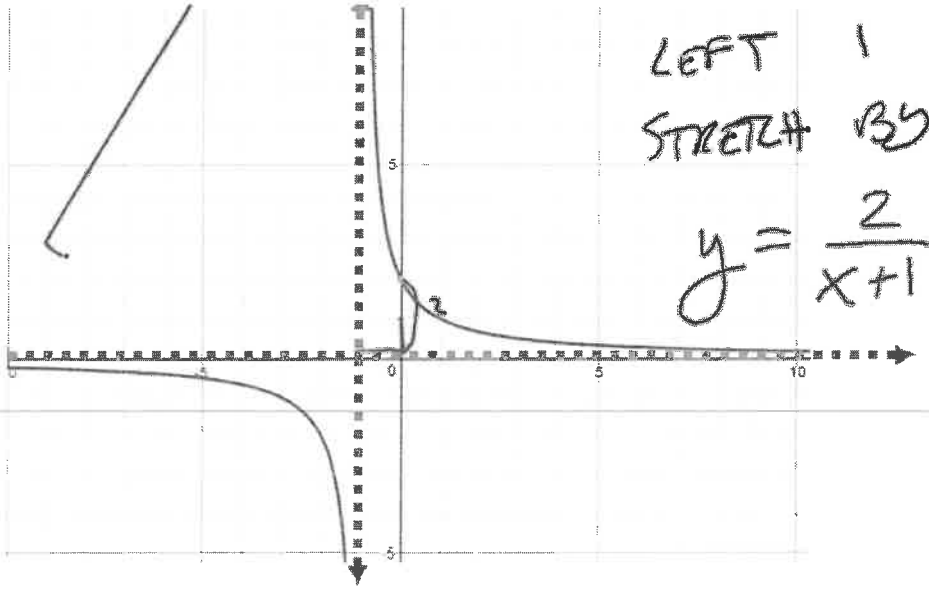
$-5+2 \stackrel{?}{=} \sqrt{4-5}$

$-3 \neq 3$

$(x+2)(x+2)$

$x^2 + 2x + 2x + 4$

$x^2 + 4x + 4$



LEFT 1

STRETCH BY (2)

$$y = \frac{2}{x+1}$$

ALWAYS, SOMETIMES, OR NEVER

- Y = KX IS AN INVERSE VARIATION

NEVER THIS IS DIRECT VARIATION

- THE DOMAIN OF AN INVERSE VARIATION FUNCTION IS $(-\infty, \infty)$.

NEVER

Domain: $(-\infty, 0) \cup (0, \infty)$

SOLVE THE SYSTEM

$F(x) = x + 3$

$G(x) = \frac{4}{x}$

$x(x+3) = \left(\frac{4}{x}\right)x$

$x^2 + 3x = 4$

$-4 \quad -4$

$x^2 + 3x - 4 = 0$

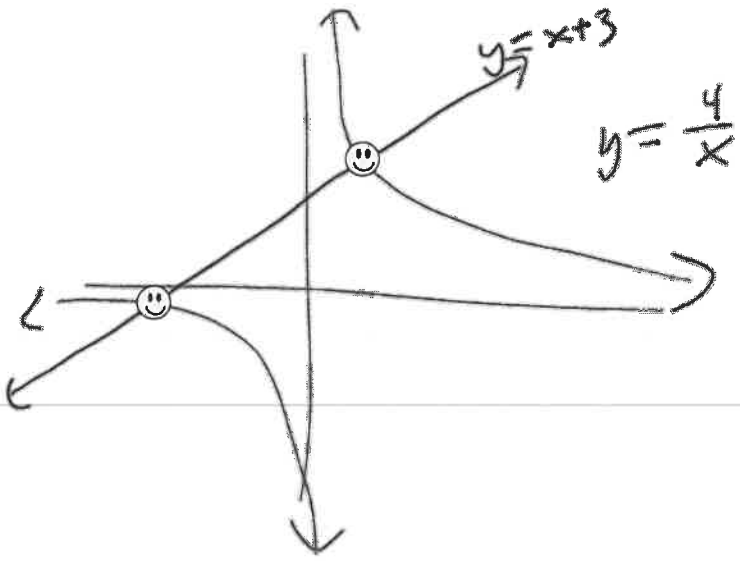
$(x+4)(x-1) = 0$

$x + 4 = 0$

$x = -4$

$x - 1 = 0$

$x = 1$


y = x+3
y = 4/x
L

$(n-7)^2 = \left(\sqrt{22-2n}\right)^2$ ☺

$(n-7)(n-7) = 22-2n$

$n^2-14n+49 = 22-2n$

$+2n \quad -22 \quad -22 \quad +2n$

$n^2-12n+27=0$

$(n-9)(n-3)=0$

$n-9=0 \Rightarrow n=9$ ✓

$n-3=0$ ~~$n=3$~~

$n-7=\sqrt{22-2n}$

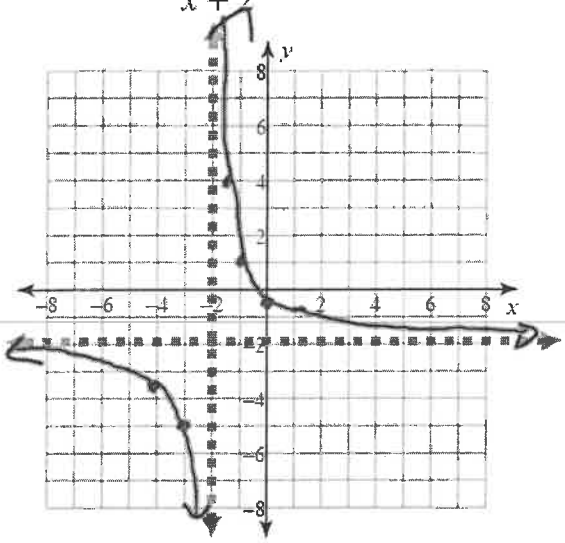
$9-7=\sqrt{22-2(9)}$

$2=\sqrt{4}$

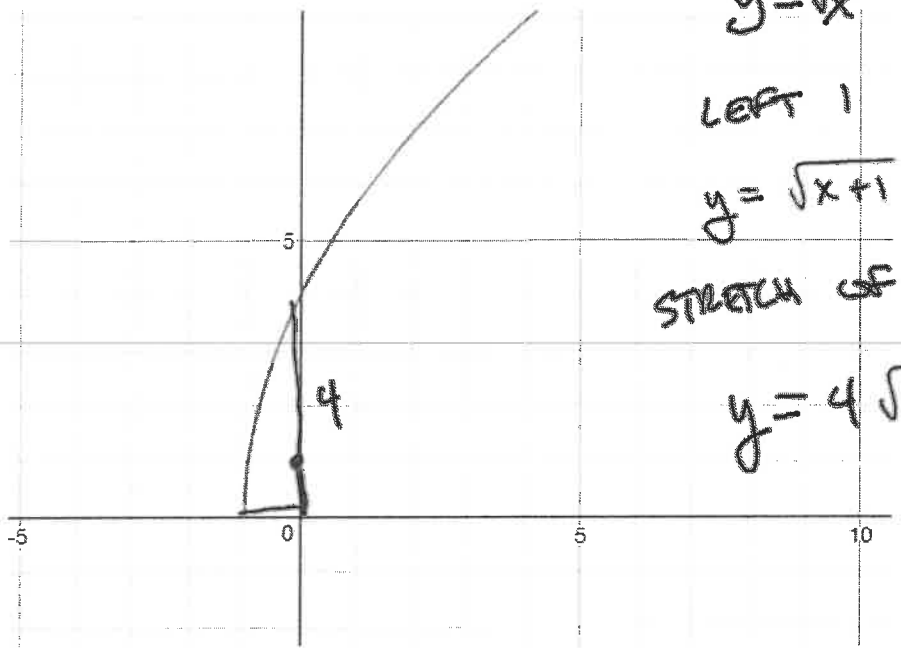
$3-7 \stackrel{?}{=} \sqrt{22-2(3)}$

$-4 \neq 4$

$$f(x) = \frac{3}{x+2} - 2$$



VERTICAL STRETCH OF 3
LEFT 2
DOWN 2



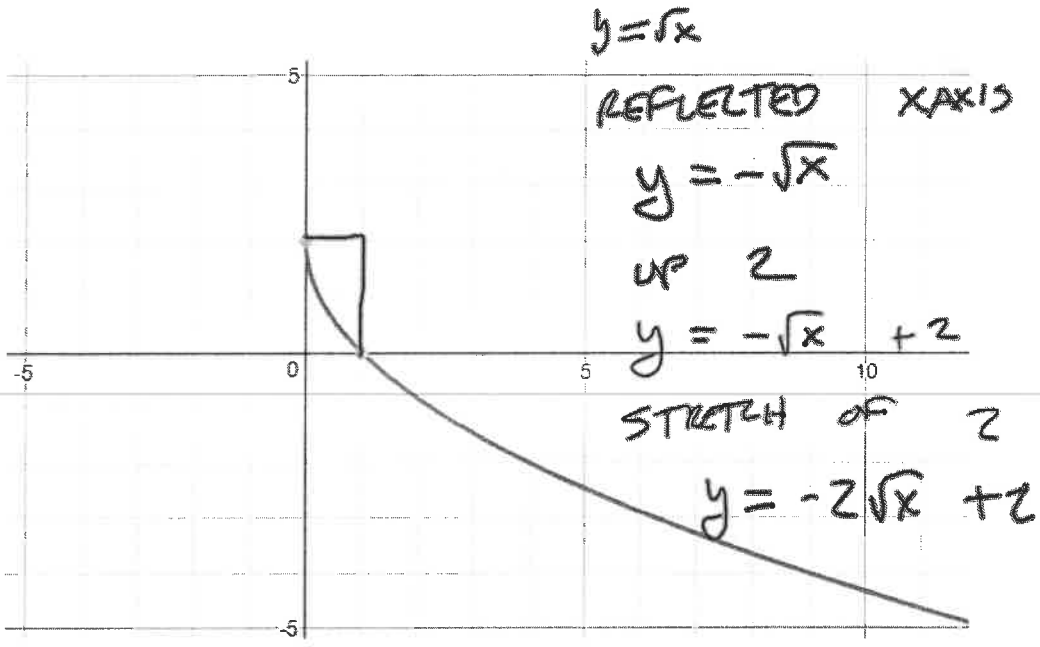
$y = \sqrt{x}$

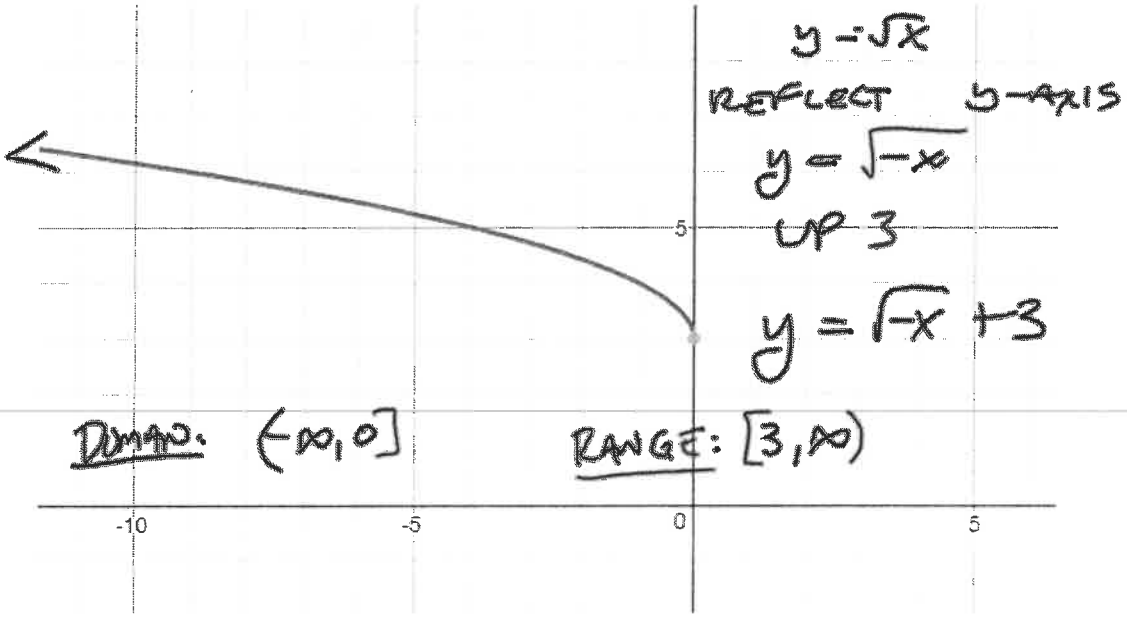
LEFT 1

$y = \sqrt{x+1}$

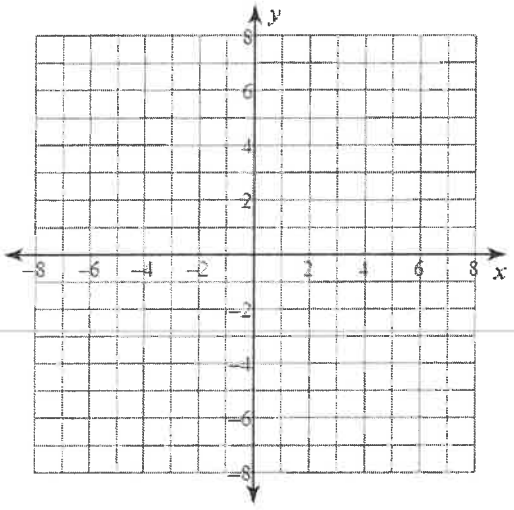
STRETCH OF 4

$y = 4\sqrt{x+1}$


y=√x
REFLECTED XAXIS
y=-√x
UP 2
y=-√x +2
STRETCH OF 2
y=-2√x +2
5
0
5
10
-5
-5


y = √x
REFLECT y-AXIS
y = √-x
UP 3
y = √-x + 3
5
-10
-5
0
5
DOMAIN: (-∞, 0]
RANGE: [3, ∞)

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



DOMAIN: $[-1, \infty)$

$x + 1 \geq 0$

$x \geq -1$

RANGE: $[1, \infty)$

$\sqrt{4a+48} - 4 = a$

$+4 \quad +4$

$\sqrt{4a+48} = a+4$

$\left(\sqrt{4a+48}\right)^2 = (a+4)^2$

$4a + 48 = a^2 + 8a + 16$

$-4a \quad -48 \qquad -4a \quad -48$

$0 = a^2 + 4a - 32$

$0 = (a+8)(a-4)$

$a+8=0 \qquad a-4=0$

$a \neq -8 \qquad \boxed{a=4}$

Check:

(-8) $\sqrt{4(-8)+48} - 4 \stackrel{?}{=} -8$

$\sqrt{-32+48} - 4$

$\sqrt{16} - 4$

$4 - 4 = -8$

$0 \neq -8$

(4) $\sqrt{4 \cdot 4 + 48} - 4 = 4$

$\sqrt{16+48} - 4 = 4$

$\sqrt{64} - 4 = 4$

$8 - 4 = 4$ ✓

$\sqrt{14-5x} = x$

$(\sqrt{14-5x})^2 = (x)^2$

$14 - 5x = x^2$

$-14 + 5x \quad +5x - 14$

$0 = x^2 + 5x - 14$

$0 = (x+7)(x-2)$

~~$x = -7$~~ or $\boxed{x = 2}$

(-7) $\sqrt{14-5(-7)} = -7$

$\sqrt{14+35} = -7$

$\sqrt{49} \neq -7$

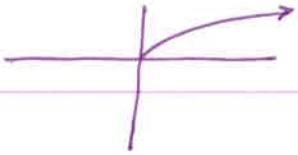
$\sqrt{14-5(2)} = 2$

$\sqrt{14-10} = 2$

$\sqrt{4} = 2$

ALWAYS, SOMETIMES, OR NEVER

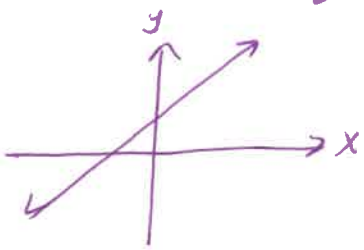
- THE RANGE OF A SQUARE ROOT FUNCTION IS $(-\infty, 0]$ Sometimes



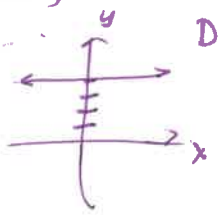
$R = [0, \infty)$

$R = (-\infty, 0]$

- THE DOMAIN AND RANGE OF A LINEAR FUNCTION IS $(-\infty, \infty)$ Sometimes

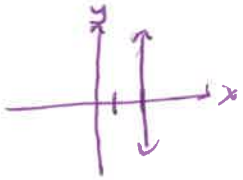


$D = (-\infty, \infty)$
$R = (-\infty, \infty)$



D

$D = (-\infty, \infty)$
$R = [4]$



$D = [2]$
$R = (-\infty, \infty)$

$$\frac{3}{x} = 2x + 1$$

$$\frac{3}{x} = \frac{2x+1}{1}$$

$x(2x+1) = 3$

$2x^2 + x = 3$

$2x^2 + x - 3 = 0$

$(2x + 3)(x - 1) = 0$

$2x + 3 = 0$ $\quad x - 1 = 0$

$2x = -3$ $\quad x = 1$

$x = -\frac{3}{2}$

$-3/2$

$\frac{3}{-3/2} = 2\left(-\frac{3}{2}\right) + 1$

$3 \cdot \frac{2}{-3} \quad -3 + 1$

$= -2 \quad = -2$ ✓

①

$\frac{3}{1} = 2(1) + 1$

$3 = 2 + 1$ ✓

I

IT TAKES FIVE PEOPLE THREE HOURS TO PAINT A ROOM. HOW MANY MORE MINUTES WOULD IT TAKE FOUR PEOPLE TO PAINT THE ROOM?

I

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

$t = \frac{k}{p}$

I

$3 = \frac{k}{5}$

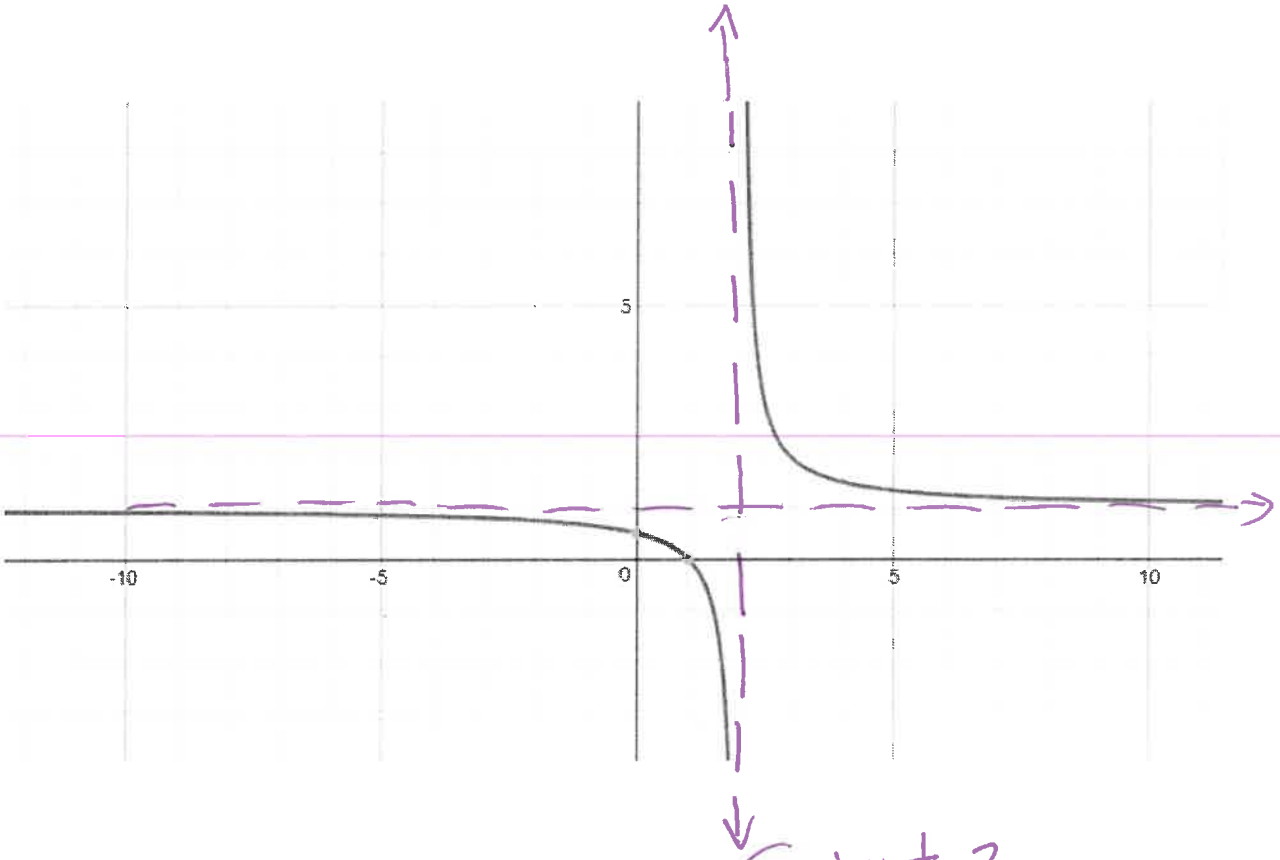
$k = 15$

II

$T = \frac{15}{4}$

$T = 3.75$ (3 hrs. 45 min)

- It took 4 people 45 minutes longer than it took 5 people.



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

right 2
up 1
no stretch
no flip