WARM UP

1) Solve by factoring.

a) $9x^2 - 25 = 0$ $(3x+5)(3x-5)$

$x = \pm 5/3$

b) $x^2 - x - 42 = 0$ $(x-7)(x+6)$

F: -42 A: -1 $x = 7, -6$

c) $15x^2 - 4x - 4 = 0$

$x = 2/3, -2/5$

2) $3(x+3)^{\frac{3}{4}} = 81$

$(x+3)^{3/4} = 27$

$\sqrt[3]{\sqrt[4]{x+3}^{3}} = \sqrt[3]{27}$

$\sqrt[4]{x+3}^{4} = 3^4$

$x+3 = 81$

$x = 78$

3) Graph: $y = \sqrt[3]{x+4} - 2$

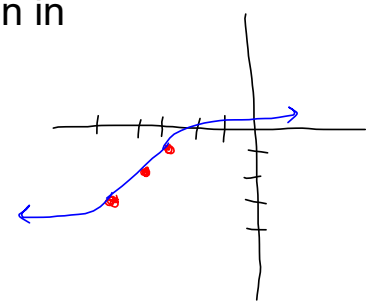
Be sure to show at least 3 points.

x	y
-1	-1
0	0
1	1

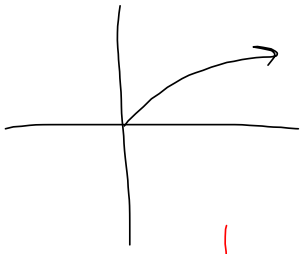
x-4	y-2
-5	-3
-4	-2
-3	-1

Write expression in simplest form.

4) $\left(x^{\frac{3}{8}} y^{\frac{1}{4}} \right)^{16}$

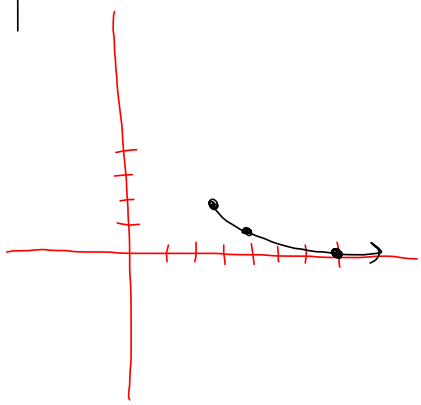


$y = -\sqrt{x-3} + 2$



x	-y
0	0
1	-1
4	-2

x+3	y+2
3	2
4	1
7	0



Domain and Range
Today's lesson will be a review of domain and range


In review...
The domain is the set of all the x values or inputs.
The range is the set of all the y values or outputs.

There are three different views that can be given in order to find the domain and range of a function

Set of Ordered Pairs

$\{(2,3),(-1,5),(6,3)\}$

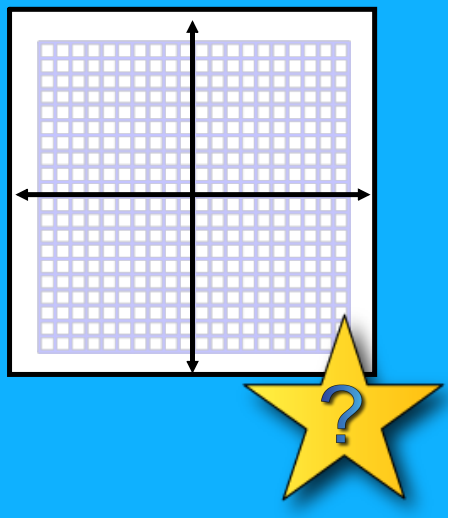
Equation

$f(x) = 2x - 3$

$g(x) = x^2 + 3$

$h(x) = \sqrt{x-3}$

Graph



Domain...

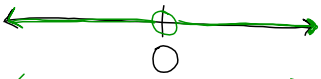
To find the domain of a function, exclude all values that make the **denominator** zero or make a negative number **under the radical (that has an even index)**

Examples: What x values make the expression undefined?

Copy these problems. We will find the domain on the next page.

$f(x)=\frac{1}{x}$

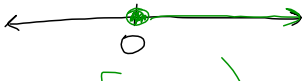
$x \neq 0$



$D:(-\infty,0)(0,\infty)$

$f(x)=3\sqrt{x}$

$x \geq 0$



$D:[0,\infty)$

$f(x)=x^2-3x-10$

$D:(-\infty,\infty)$

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

$x-3 \neq 0$

$x \neq 3$

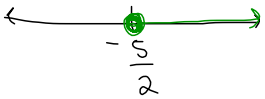
$D:(-\infty,3)(3,\infty)$

$f(x)=\sqrt{2x+5}$

$2x+5 \geq 0$

$2x \geq -5$

$x \geq -\frac{5}{2}$



$D:[-\frac{5}{2},\infty)$

$f(x)=\frac{5}{3x^2+13x-10}$

$3x^2+13x-10 \neq 0$

$F:-30 \quad A:13$

$15,-2$

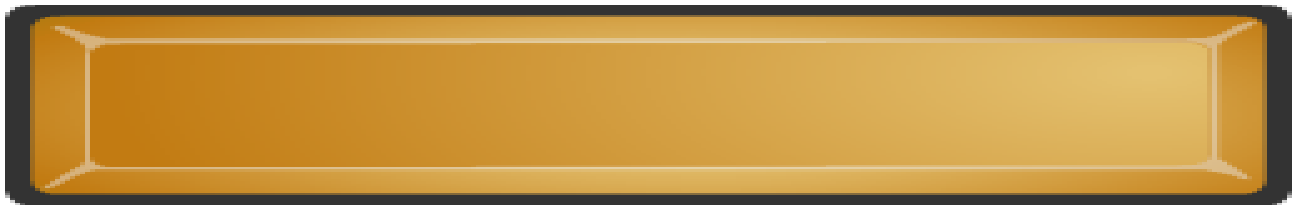
$(3x^2+15x)(-2x-10) \neq 0$

$3x(x+5)-2(x+5) \neq 0$

$(x+5)(3x-2) \neq 0$

$x \neq -5 \quad x \neq \frac{2}{3}$

$D:(-\infty,-5)(-5,\frac{2}{3})(\frac{2}{3},\infty)$



$f(x) = \frac{1}{x}$ $f(x) = 3\sqrt{x}$ $f(x) = x^2 + 3x - 10$

$f(x) = \frac{2}{x-3}$ $f(x) = \sqrt{2x+5}$ $f(x) = \frac{5}{3x^2+13x-10}$

3 Different situations when Finding the Domain:

Examples:

- SIMPLE EQUATION: $y = 2x^2 - 3x + 1$

  $y = 2x - 5$

- FRACTION: $y = \frac{7}{x+5}$

  $x \neq -5$

  $D: (-\infty, -5)(-5, \infty)$

- SQ ROOT: $y = \sqrt{2x - 10}$

  $x \geq 5$

  $D: [5, \infty)$

Find the domain of each function (given an equation).

1) $f(x) = 6x^2 - 13x - 5$

2) $f(x) = \frac{1}{x^2 - 5x - 14}$ $\neq 0$

$(x-7)(x+2) \neq 0$

$x \neq 7, -2$

$(-\infty, -2)(-2, 7)(7, \infty)$

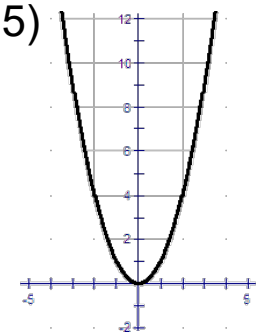
3) $f(x) = \sqrt{2x + 10}$

Find the domain of the function (given a set of ordered pairs).

4) {(3,10), (-5,7), (1,8), (3,13)}

Determine whether the graph is a function. Then find the domain.

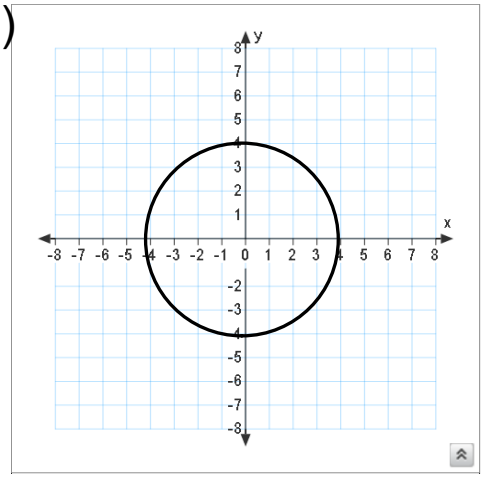
5)



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

Range: $[0, \infty)$

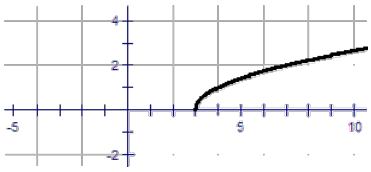
6)



Domain: $[-4, 4]$

Range: $[-4, 4]$

7)



Domain: $[3, \infty)$

Range: $[0, \infty)$

HW
WB pg 62 #1-20 all