WARM UP

1) Solve by factoring.

a) $9x^2 - 25 = 0$

b) $x^2 - x - 42 = 0$

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

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

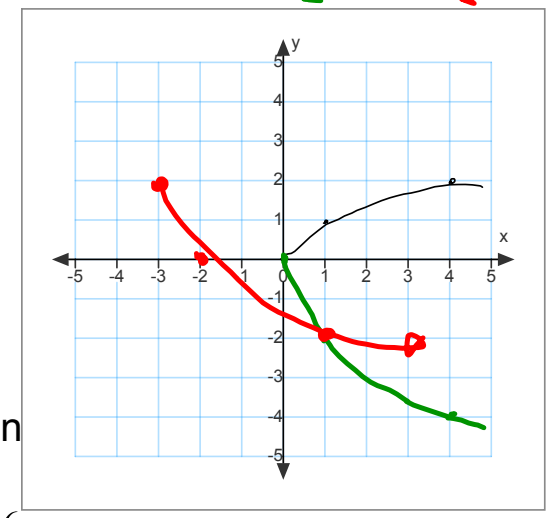
0 1 up t 2

0 3 up t 2

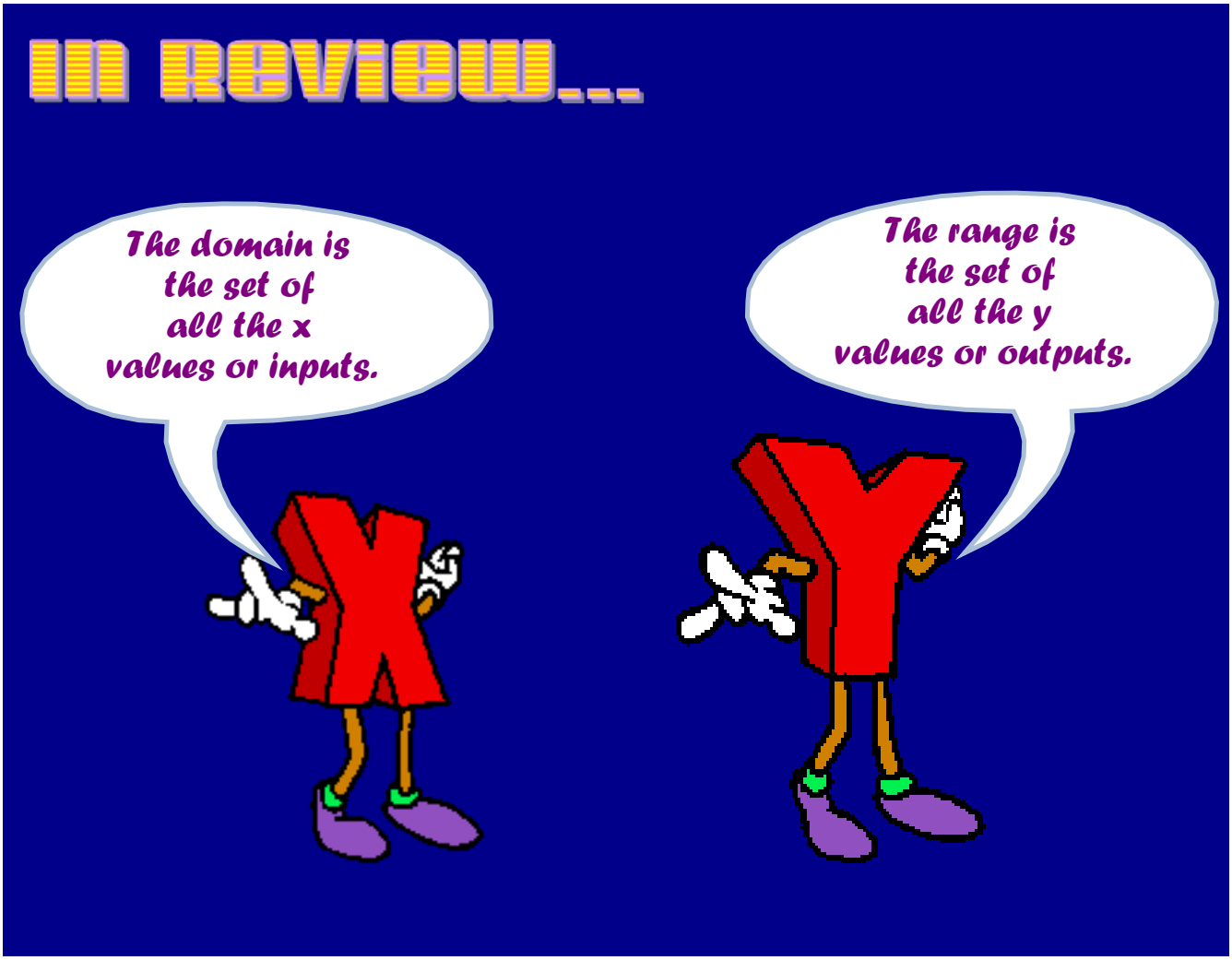
Write expression in simplest form.

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

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



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.
X
Y

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

Set of Ordered Pairs

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

Domain

$\{-1, 2, 6\}$

Range

$\{3, 5\}$

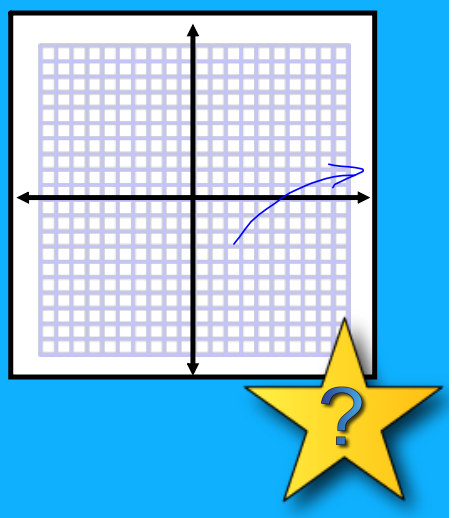
Equation

$f(x) = 2x - 3$

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

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

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**

Examples: What x values make the expression undefined?

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

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

$x \neq 0$

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

$x \geq 0$

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

$\mathbb{R}$

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

$x-3=0$

$x=3$

$x \neq 3$

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

$2x+5 \geq 0$

$-5 \quad -5$

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

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

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

$0=3x^2+13x-10$

-30

$15 \quad -2$

13

$(x+15)(x-2)$

$3 \quad\quad 3$

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

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

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

Write domain using **interval notation:**
rounded bracket means not in domain
square bracket means in domain

1. $f(x)=\frac{1}{x}$ $(-\infty,0)(0,\infty)$	2. $f(x)=3\sqrt{x}$ $[0,\infty)$	3. $f(x)=x^2+3x-10$ $(-\infty,\infty)$
4. $f(x)=\frac{2}{x-3}$ $(-\infty,3)(3,\infty)$	5. $f(x)=\sqrt{2x+5}$ $[-\frac{5}{2},\infty)$	6. $f(x)=\frac{5}{3x^2+13x-10}$ $(-\infty,-5)(-5,\frac{2}{3})(\frac{2}{3},\infty)$

( ) is not included

[ ] is included

3 Different situations when Finding the Domain:

No fraction
No radical

Examples:

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

  $y = 2x - 5$

  $(-\infty, \infty)$

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

  Set denominator equal to 0

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

  Set inside ≥ 0

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

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

2) $f(x) = \dfrac{1}{x^2 - 5x - 14}$

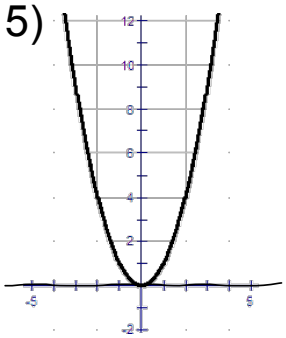
3) $f(x) = \sqrt{2x + 10}$

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

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

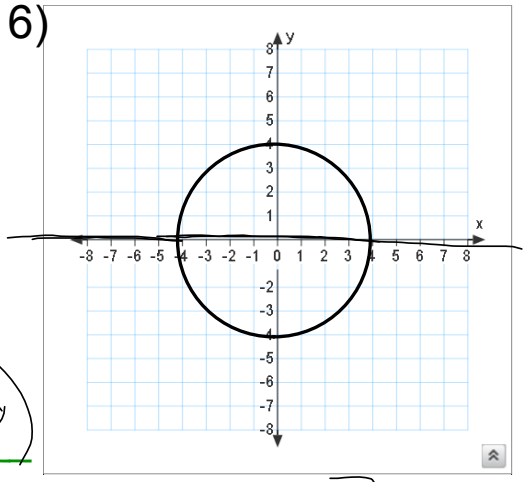
Determine whether the graph is a function. Then find the domain.

5)



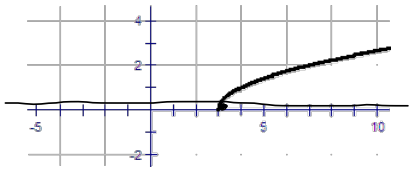
Domain: $(-\infty, \infty)$

6)



Domain: $[-4, 4]$

7)



Domain: $[3, \infty)$

HW
WB pg 48 #1-20 all