PreCalculus - Warm Up - 8/25/17

Let $g(x)=3x^2+x-2$ and find the following:

1. g(2) 2. g(-4) 3. g(x - 1)

$3(x-1)^2+(x-1)-2$

$3(x^2-2x+1)+x-3$

$3x^2-6x+\cancel{3}+x-\cancel{3}$

$\boxed{3x^2-5x}$

4. Graph the piecewise function:

$$f(x)=\begin{cases} x^2, & x<0 \\ -3x+4, & x\geq 0 \end{cases}$$

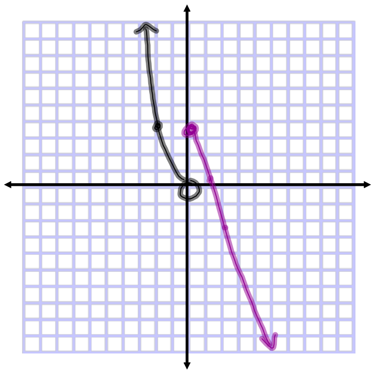
$f(-2)=4$

$f(0)=0$

open circle

$f(0)=4$

closed circle



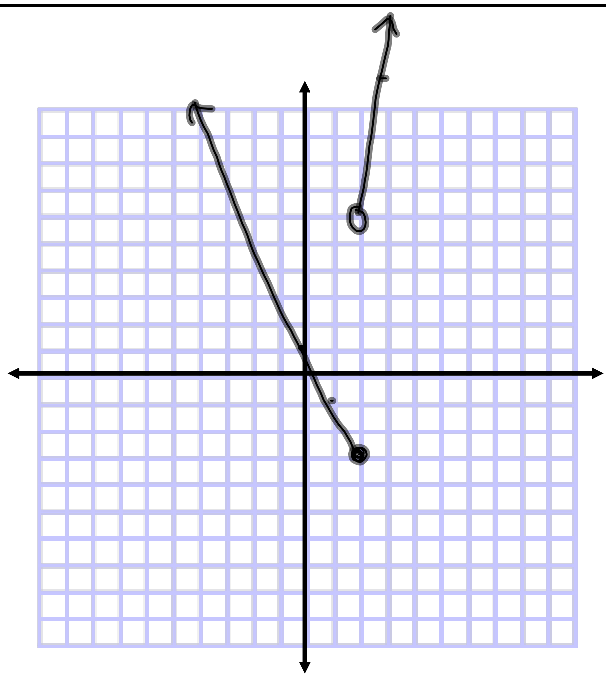
$$f(x)=\begin{cases} -2x+1 & x\leq 2 \\ 5x-4 & x>2 \end{cases}$$

$f(2)=-2(2)+1=-3$

Closed circle

$f(2)=5(2)-4=6$

open circle



Part 2: Domain

Find the domain of each function.

a. *f*: {(–3, 0), (–1, 4), (0, 2), (2, 2), (4, –1)}

D: {−3, −1, 0, 2, 4}

b. $g(x) = -3x^2 + 4x + 5$ → polynomial

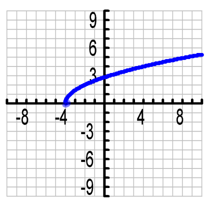
D: $(-\infty, +\infty)$

c. $h(x) = \dfrac{1}{x+5}$ D: $(-\infty, -5) \cup (-5, +\infty)$

$x + 5 = 0$ $x \neq -5$

The domain of a function can be described explicitly or it can be *implied* by the expression used to define the function. The **implied domain** is the set of all real numbers for which the expression is defined. ~~For instance, the function~~

What is the domain of this function?



D:$[4, +\infty)$

If you can evaluate a function for any x a nd get some value for y (does not matter what value) for any value of x, then the domain is all real numbers.

$(-\infty, \infty)$ → polynomials

2 RED FLAGS

even radicals
(i.e. square roots)

$y = \sqrt{2x+8}$

Domain excludes *x*-values that results in even roots of negative numbers.

Set $(2x+8)$ equal to zero

$2x + 8 = 0$

$x = -4$

D: $[-4, +\infty)$

fractions

$f(x) = \dfrac{x^2 - 2x - 15}{x - 4}$

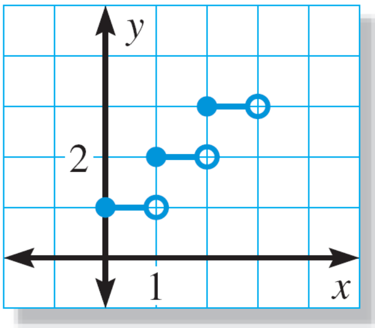
Domain excludes *x*-values that result in division by zero.

Set denominator equal to zero

$x - 4 = 0$ $x \neq 4$

D: $(-\infty, 4) \cup (4, +\infty)$

Writing a piecewise function:



f(x) = 1 if [0, 1)

f(x) = 2 if [1, 2)

f(x) = 3 if [2, 3)

Attachments

Function definition