$2x+3y=5$

$3y=-2x+5$

$y=-\frac{2}{3}x+\frac{5}{3}$

$\parallel : m=-\frac{2}{3}$

$\perp : m=\frac{3}{2}$

& $(-1,2)=(x_1,y_1)$

$y-y_1=m(x-x_1)$

$y-2=\frac{3}{2}(x-(-1))$

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

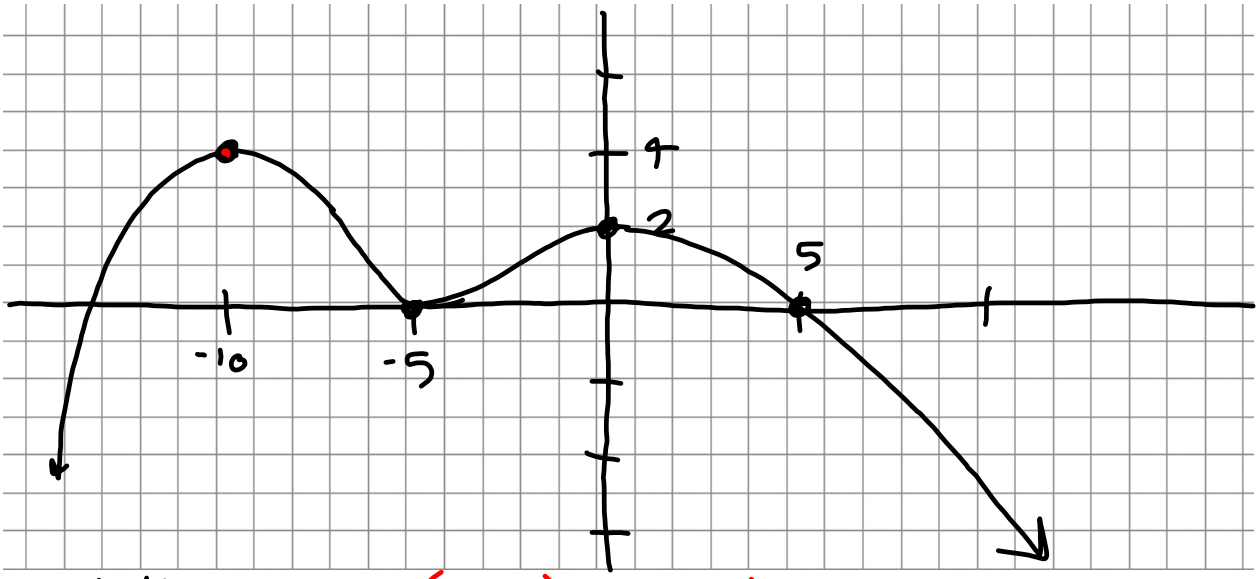
$y=\frac{3}{2}x+\frac{7}{2}$

Maxima & Minima =

Extrema of a Function

Absolute max/min refer to single highest or lowest values on the graph (if they exist)

Relative max/min refer to highest & lowest values in small intervals

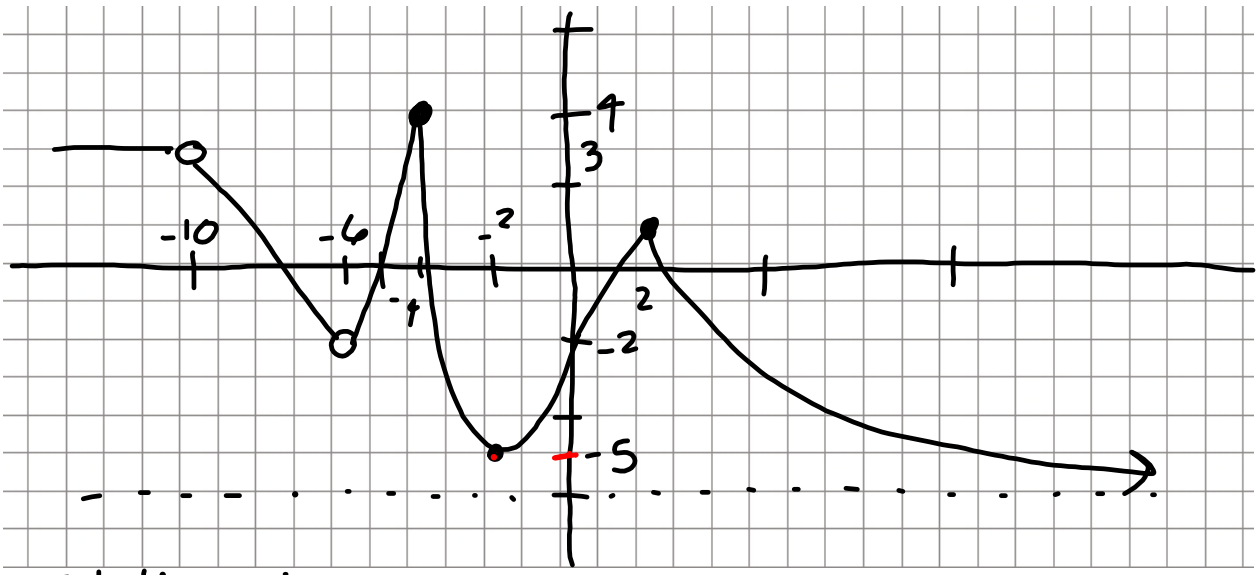


relative max: (-10,4) & (0,2)

relative min: (-5,0)

absolute max: 4 @ x=-10

absolute min: none



relative min: (-2,-5)

relative max: (-4,4) & (2,1)

absolute min: none

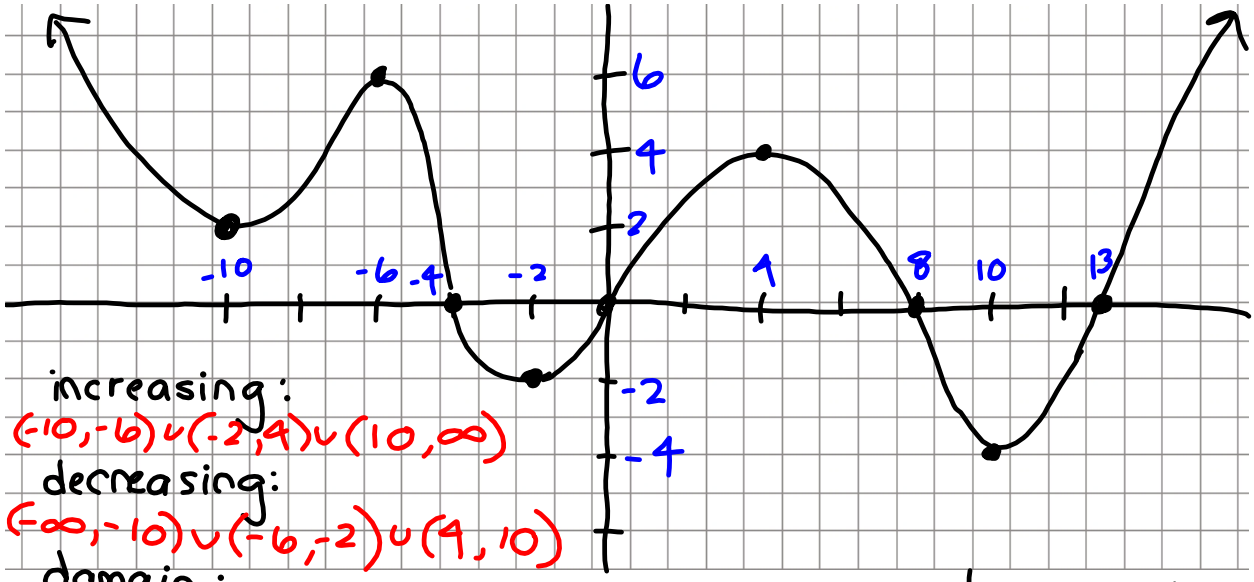
absolute max: 4 @ x=-4

domain:

$(-\infty,-10)\cup(-10,-6)\cup(-6,\infty)$

range:

$(-6,4]$



increasing:
$(-10,-6)\cup(-2,4)\cup(10,\infty)$

decreasing:
$(-\infty,-10)\cup(-6,-2)\cup(4,10)$

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

range: $[-4,\infty)$

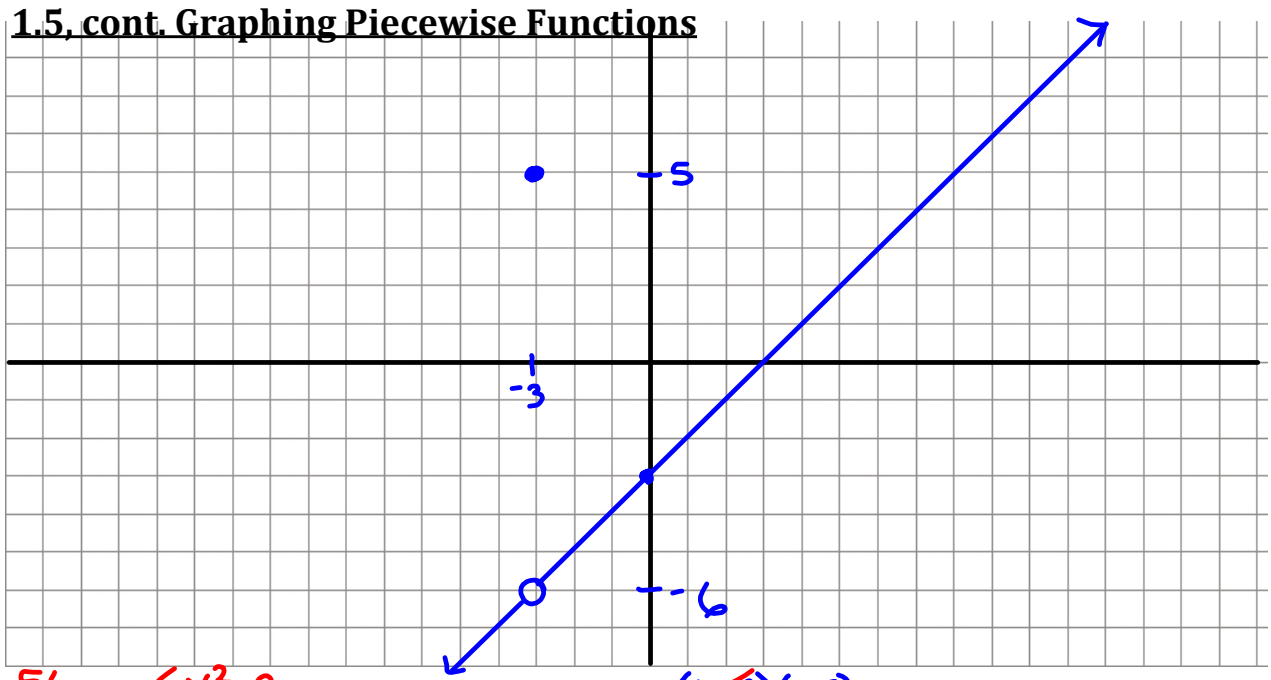
relative max:
$(-6,6)$ & $(4,4)$

relative min:
$(-2,-2)$ & $(10,-4)$ & $(-10,2)$

abs. max:
none

abs. min: $(10,-4)$
-4 @ $x=10$

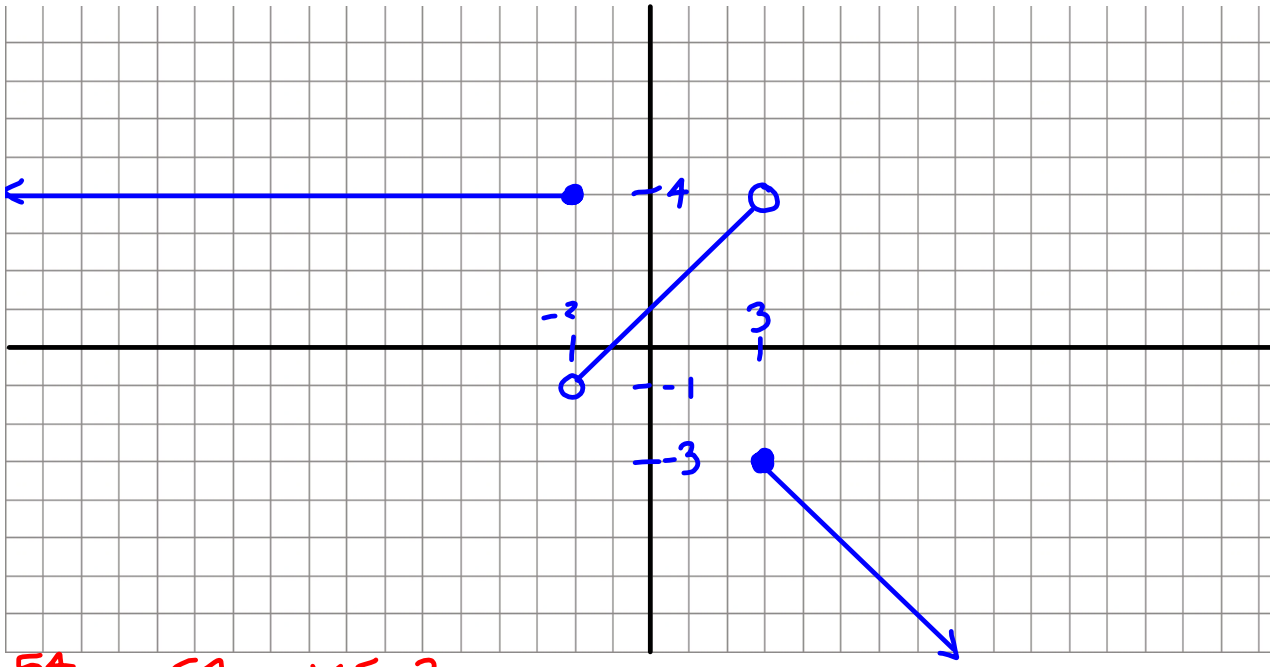
1.5, cont. Graphing Piecewise Functions



56.
$$f(x)=\begin{cases}\dfrac{x^2-9}{x+3}, & x\neq -3\\ 5, & x=-3\end{cases}$$

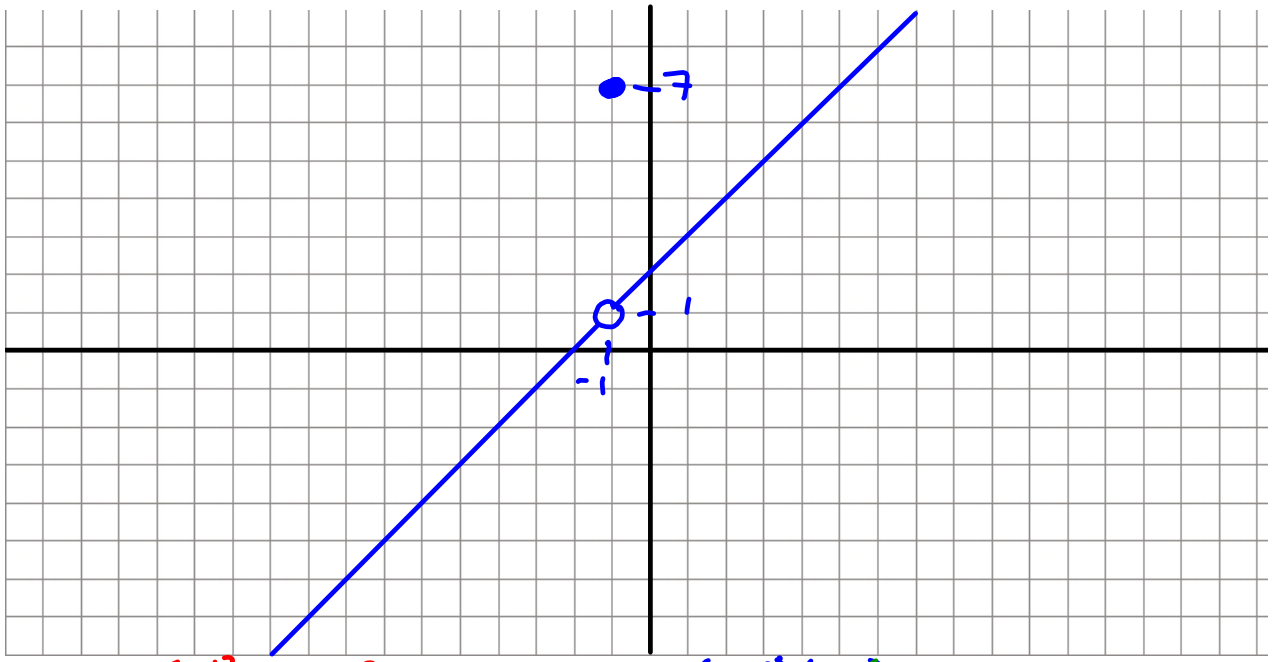
$$\frac{(\cancel{x+3})(x-3)}{\cancel{x+3}}$$

$$f(x)=\begin{cases}x-3, & x\neq -3\\ 5, & x=-3\end{cases}$$



54.

$$f(x) = \begin{cases} 4, & x \le -2 \\ x+1, & -2 < x < 3 \\ -x, & x \ge 3 \end{cases}$$



58.

$$f(x) = \begin{cases} \dfrac{x^2+3x+2}{x+1}, & x \ne -1 \\ 7, & x = -1 \end{cases}$$

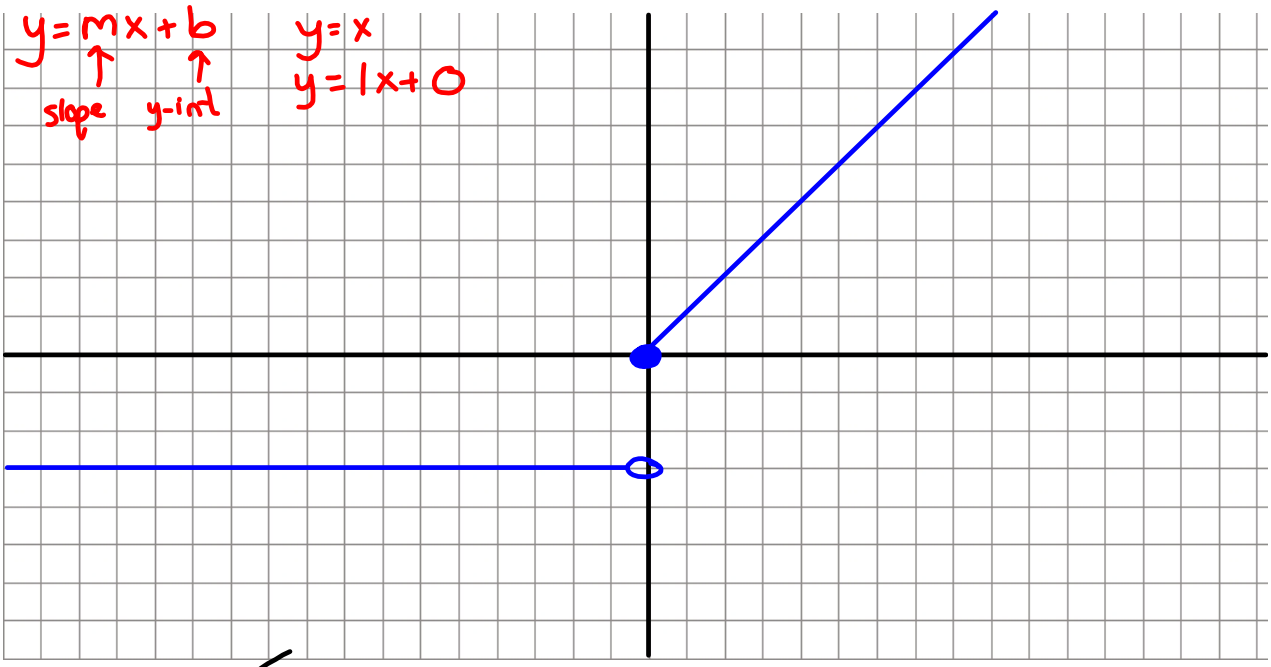
$$\frac{(x+2)\cancel{(x+1)}}{\cancel{x+1}} = x+2$$

$y = mx + b$

slope y-int

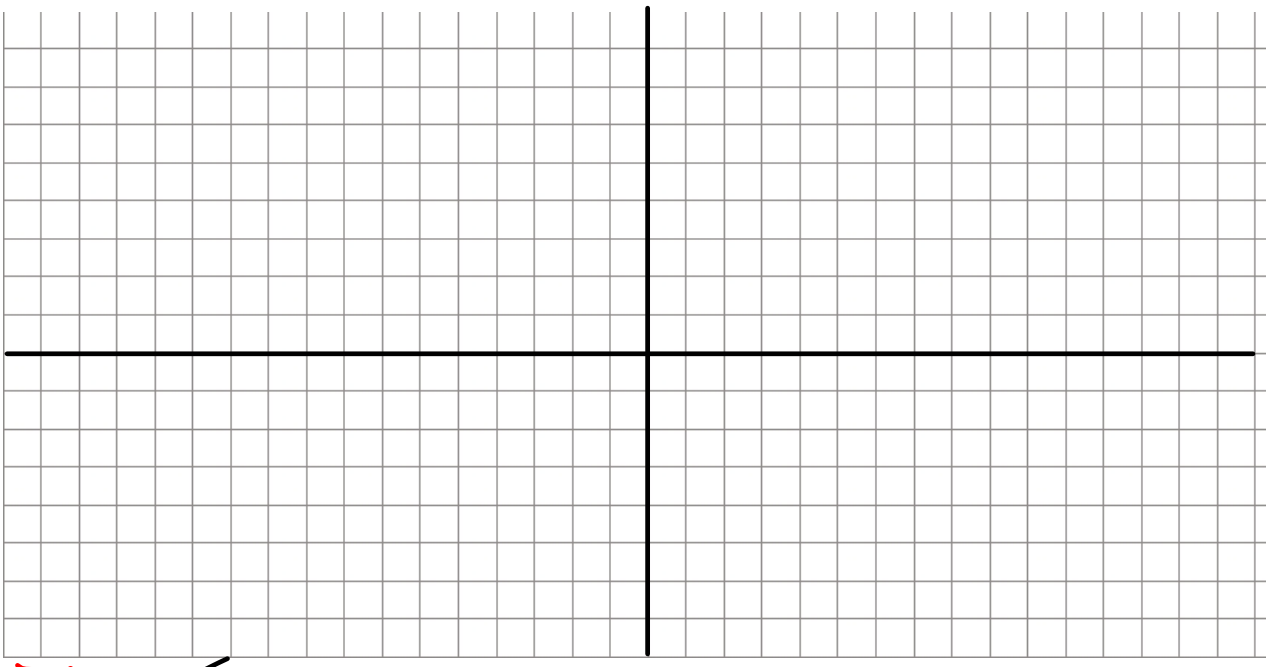
$y = x$

$y = 1x + 0$



70.

$$g(x) = \begin{cases} -3 & , x < 0 \\ x & , x \geq 0 \end{cases}$$



74.

$$f(x) = \begin{cases} -2x - 4 & , -4 \leq x \leq -1 \\ x - 1 & , -1 \leq x < 2 \\ 2 & , x \geq 2 \end{cases}$$

Homework #1 (due Friday, 08/15):

- 1.2: #15-29odd (determining if a relation is a function; determining function values)
  #40,41,42,45,48 (determining domain of a function)
  #59-70all (determining if a graph is a function; domain & range from graph)
- 1.4: #35-47odd; 53-63odd (determining equations of lines; parallel v. perpendicular)
- 1.5: #1-16all (determining characteristics of functions from graphs)
  #47-53odd (determining function values of & graphing piecewise functions)

Quiz #1 - Monday, 8/18

Test #1 - Friday, 8/22