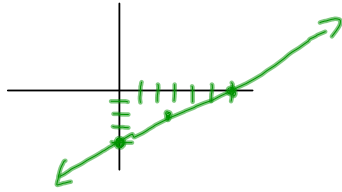


3.3 Graphs of Functions

Linear Equations: $y = mx + b$
 slope = m
 b = y-intercept

- Start by graphing the y-intercept
- Use the slope as rise over run

Ex1) $y = 2/3 x - 4$

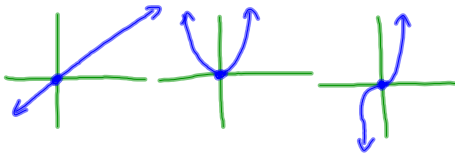


Other Basic graphs:

1) $y = x$

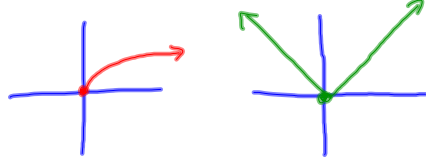
2) $y = x^2$

3) $y = x^3$



4) $y = \sqrt{x}$

5) $y = |x|$

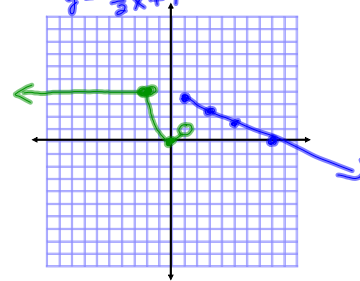


Oct 8-9:41 PM

Piecewise Functions

- graph each eqn over its given domain.
- use endpoints in the domain to plot points

ex) $f(x) = \begin{cases} 4 & , x < -2 & (-2, 4) \\ x^2 & , -2 \leq x < 1 & (-2, 4) (1, 1) \\ -0.5x + 4 & , x \geq 1 & (1, 3.5) (9, 0) \end{cases}$

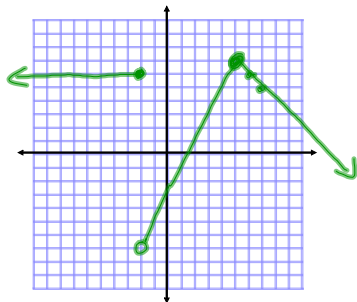


HW p145 #1-4, 9,10,12,31,32,39

Sep 30-3:32 PM

ex1) Graph $f(x) = \begin{cases} 6 & , x \leq -2 & (-2, 6) \\ 2x-3 & , -2 < x < 5 & (-2, -1) (5, 7) \\ 12-x & , x \geq 5 & (5, 7) \end{cases}$

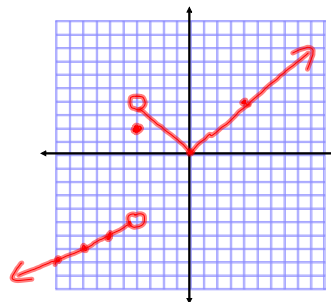
On what intervals is $f(x)$ increasing? $(-2, 5)$
 On what intervals is it decreasing? $(5, \infty)$



Oct 8-9:43 PM

ex2) Graph $g(x) = \begin{cases} 1/2 x - 3 & , x < -4 & (-4, -5) \\ |x| & , x > -4 & (-4, 4) \\ 2 & , x = -4 & (-4, 2) \end{cases}$

On what intervals is $g(x)$ increasing? $(0, \infty)$ $(-\infty, -4)$
 On what intervals is it decreasing? $(-4, 0)$



Oct 8-9:46 PM

ex3) Sketch a graph that satisfies all of the following conditions:

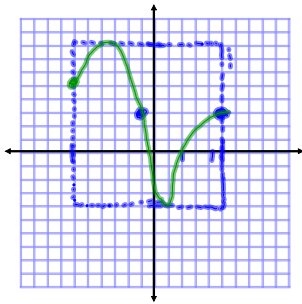
range = $[-4, 8]$

domain = $[-6, 5]$

$f(-1) = 3 = f(5)$

$f(x) \geq 0$ when x is in the interval $[2, 4]$

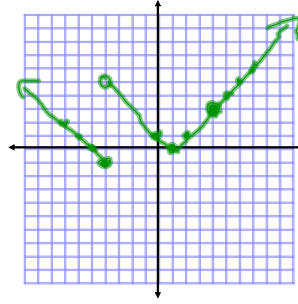
$\rightarrow (-1, 3) (5, 3)$



Oct 8-9:56 PM

ex) Graph $f(x) = \begin{cases} -x-5 & , x \leq -4 \\ |x-1| & , -4 < x < 4 \\ -1+x & , x \geq 4 \end{cases}$

On what intervals is $f(x)$ increasing?
On what intervals is it decreasing?



Oct 12-9:59 AM

)Sketch a graph for the given conditions:

domain = $[-2, 8]$

range = $[-5, 5]$

$f(0) = -3 = f(4)$

$f(x)$ is decreasing on $4 < x < 8$

$\rightarrow (0, -3) (4, -3)$



Oct 8-9:56 PM

4) find the difference quotient :
 $\frac{f(x+h) - f(x)}{h}$

for each function:

a) $f(x) = x^2 - 3x + 7$

$(x+h)^2 - 3(x+h) - [x^2 - 3x + 7]$

$x^2 + 2xh + h^2 - 3x - 3h - x^2 + 3x - 7 - 7$

$\frac{2xh + h^2 - 3h}{h} = 2x + h - 3$

b) $f(x) = 4/x$

Oct 10-11:44 AM

HW2 p 147 # 40-44, 47-65,
71,72,76,78,82,84

Oct 8-9:50 PM