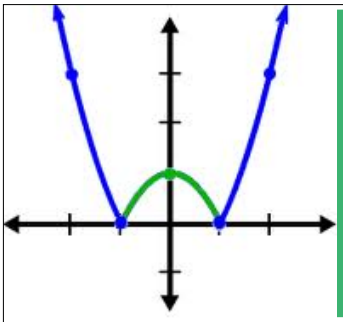
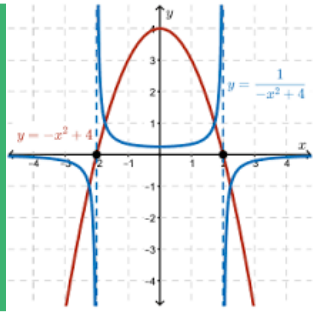
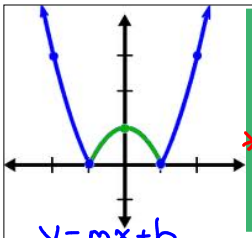


Unit 5: Absolute Values, Reciprocals, Systems, Inequalities

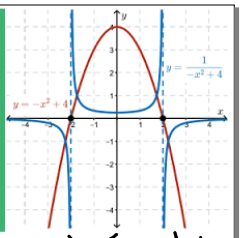


5.6 Graphing Linear Inequalities in Two Variables

Equations	Inequalities
=	<, ≤, ≥, >
definite solutions (ie. x = 2)	infinite solutions (represented by a **solution region**)
eg. y = 8x - 3	eg. y > 2x - 9



divide/multiply by a NEGATIVE, switch the inequality



y = mx + b

≥ ≤ - solid line

> < - dotted line

Ex.) Graph $4x + 2y \geq 10$. Is (1 , 3) part of the solution?

$-4x \quad -4x$

$\frac{2y}{2} \geq \frac{-4x}{2} + \frac{10}{2}$

$y \geq -2x + 5$

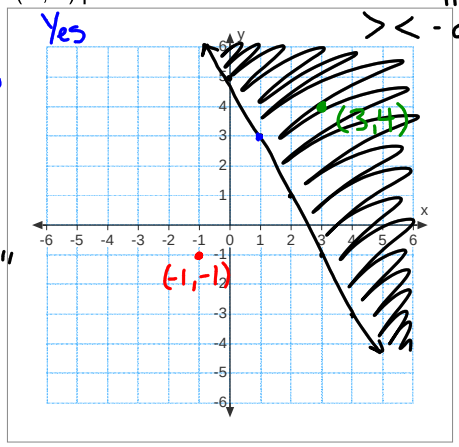
"Shade ≥ the line"

$4x + 2y \geq 10$

$4(3) + 2(4) \geq 10$

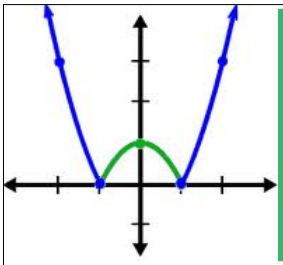
$20 \geq 10$

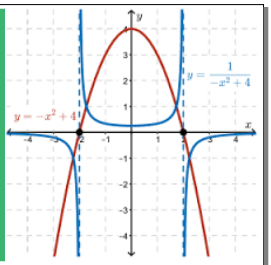
Yes



$4(-1) + 2(-1) \geq 10$

$-6 \not\geq 10$





Ex.) Graph $5x - 20y < 0$. Verify the solution region?

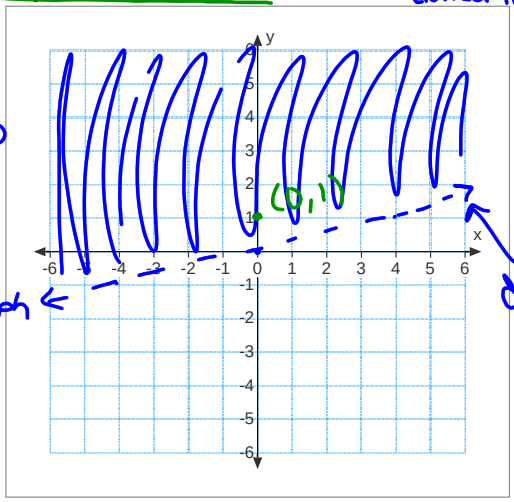
< - dotted line

$-5x \quad -5x$

$\frac{-20y}{-20} < \frac{-5x}{-20}$

* division by neg. switch inequality*

$y > \frac{1}{4}x$

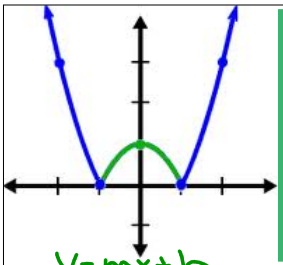


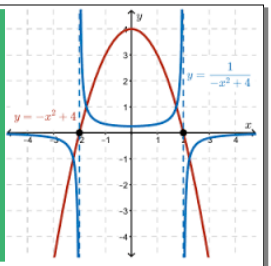
Shade > graph

Verify (original)

$5(0) - 20(1) < 0$

$-20 < 0$ ✓





$y = mx + b$

Ex.) Write an inequality to represent the graph:

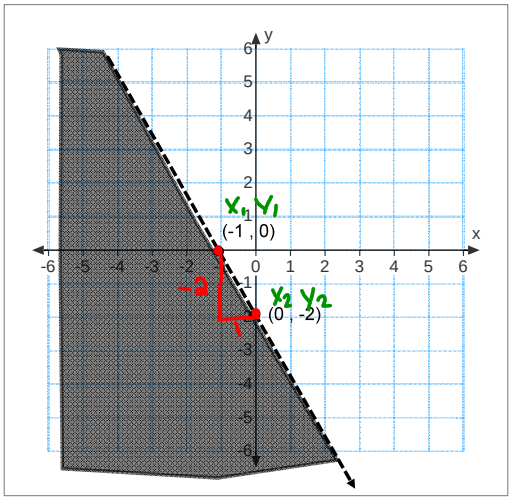
$b = -2$

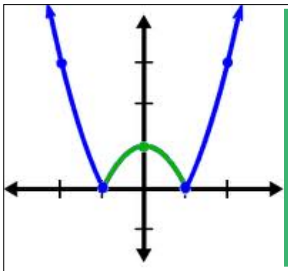
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 0}{0 - -1}$

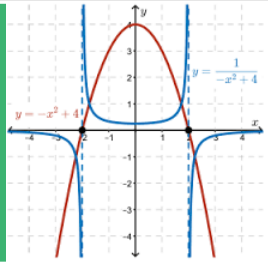
$= \frac{-2}{1}$

$y = mx + b$

$y < -2x - 2$





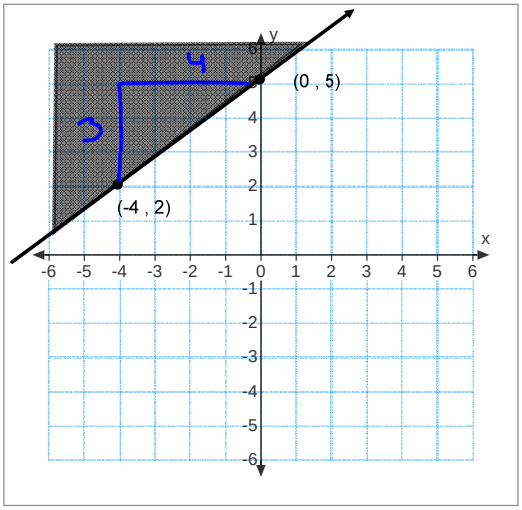


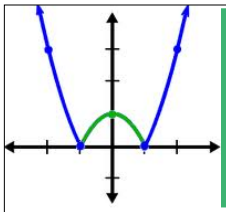
Ex.) Write an inequality to represent the graph:

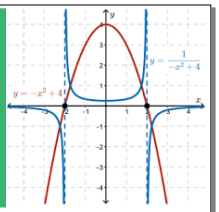
$m = \frac{3}{4}$

$b = 5$

$y \geq \frac{3}{4}x + 5$







t s

Ex.) You are constructing a mosaic made of tile and stone. Tile costs $\$2.50/ft^2$. Stone costs \$6.00/kg. Your budget may not exceed \$150.00. Use technology to find all possible solutions.

t = amount of tile (ft^2)

s = amount of stone (kg)

$2.50t + 6.00s \leq 150$

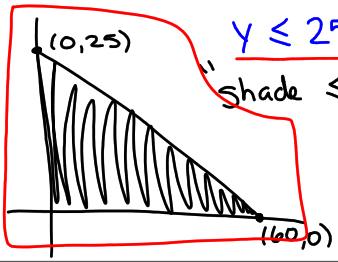
$2.50x + 6.00y \leq 150$

$-2.50x \quad -2.50x$

$\frac{6.00y}{6} \leq \frac{150 - 2.50x}{6}$

$y \leq 25 - \frac{5}{12}x$

"shade $\leq$ graph"



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