

1.6 Graphing Inequalities

System of linear equations

A set of 2 or more equations with the same variables

Solution to a system

The set of all coordinates that make all equations true.

Solve the system

Method: Elimination

$$x + 2y = 3$$

$$x - 2y = 4$$

$$2x = 7$$

$$x = 3.5$$

$$3.5 + 2y = 3$$

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

$$y = -\frac{1}{4}$$

Add the equations
to eliminate
 $2y$

Solution $(3.5, -\frac{1}{4})$

Method: Substitution

$$y = -2x - 1$$

$$5y - 6x = 7$$

$$5(-2x - 1) - 6x = 7$$

$$-10x - 5 - 6x = 7$$

$$-16x - 5 = 7$$

$$-16x = 12$$

$$x = -0.75$$

$$y = -2(-0.75) - 1$$

$$y = 1.5 - 1 = 0.5$$

Solution

$(-0.75, 0.5)$

Which method?

Elimination

$$2(3x + 2y = 5)$$

$$6x + 4y = 3$$

$$-6x - 4y = -10$$

$$0 \neq -7$$

Means no solution,
parallel lines
graphs don't intersect

Sketch the system of inequalities

$$2x + y \leq 14$$

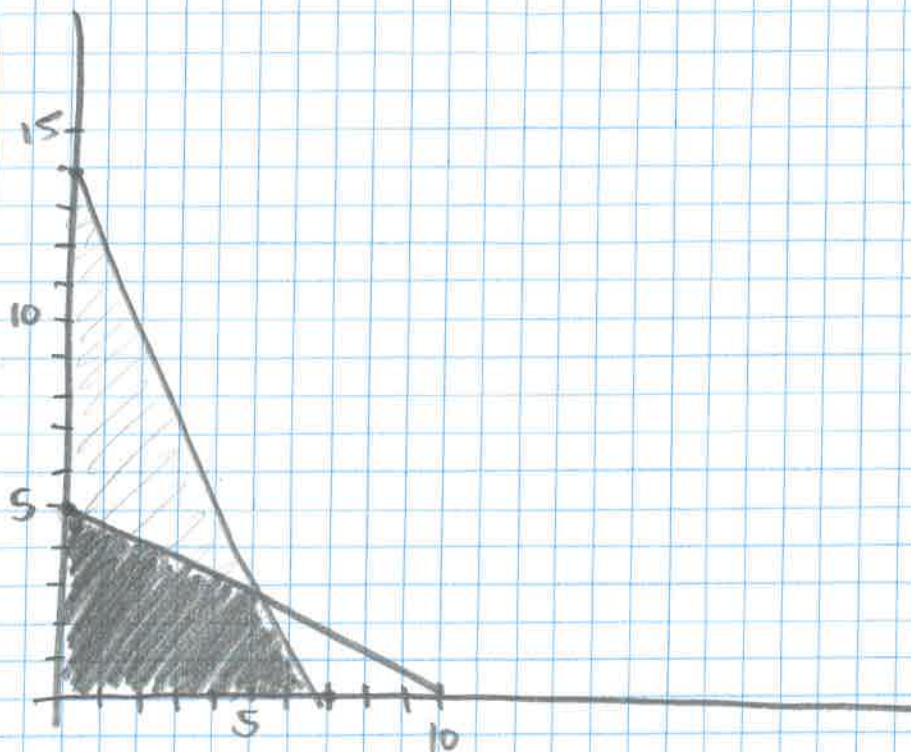
$$x + 2y \leq 10$$

$$x \geq 0$$

$$y \geq 0$$

$$x\text{-int}(7,0) \quad y\text{-int}(0,14)$$

$$x\text{-int}(10,0) \quad y\text{-int}(0,5)$$



you try:

$$y \geq 6$$

$$y \leq 10 - x$$

$$-2x + y > 4$$

