SEC 6.4 SYSTEMS OF INEQUALITIES

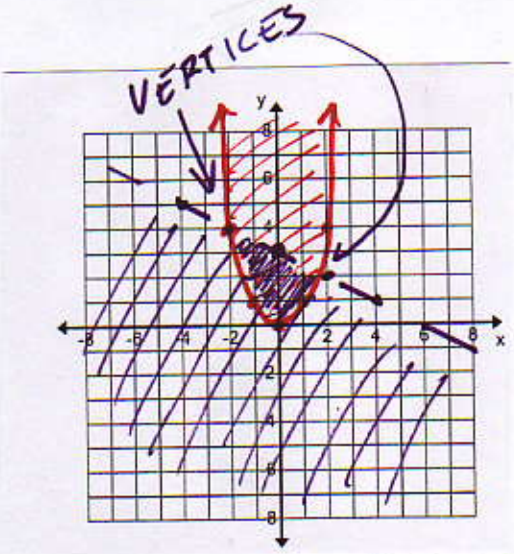
EXAMPLE:

$$y < -\frac{1}{2}x + 3$$

$0 < 3$ TRUE

$$y \geq x^2$$

$1 \geq 0^2$ TRUE



$$\begin{cases} y < -\frac{1}{2}x + 3 \\ y \geq x^2 \end{cases}$$

1. GRAPHING INEQUALITIES

A) GRAPH EACH EQUATION

B) $<$ OR $>$ DOTTED LINES

$\leq$ OR $\geq$ SOLID LINES

C) TEST A POINT

- IF POINT MAKES THE INEQUALITY TRUE → SHADE THAT POINT
- IF POINT MAKES THE INEQUALITY FALSE → SHADE OPPOSITE REGION

2. GRAPHING A SYSTEM OF INEQUALITIES

A) GRAPH & SHADE ALL INEQUALITIES ON THE SAME COORDINATE PLANE

B) FIND THE VERTICES: POINTS OF INTERSECTION OF THE TWO EQUATIONS

C) FEASIBLE REGION: PORTION OF THE GRAPH THAT HAS BEEN DOUBLE SHADED, TRIPLE SHADED, QUADRUPLE SHADED, ... ETC.

D) DECIDE IF THE SYSTEM IS BOUNDED OR UNBOUNDED.

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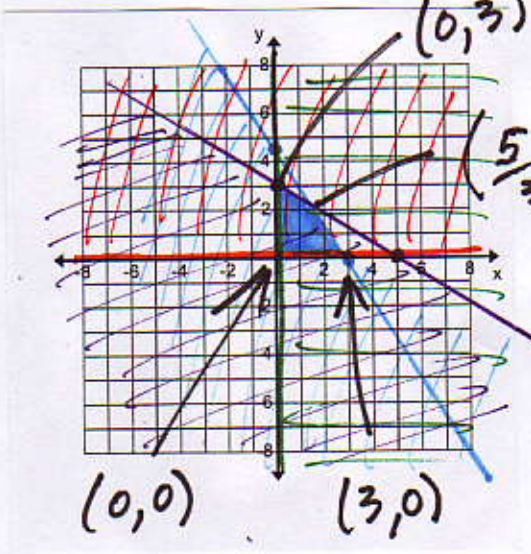
$$\begin{cases} x \geq 0 \\ y \geq 0 \\ 3x + 5y \leq 15 \\ 3x + 2y \leq 9 \end{cases}$$



$-3x + 5y \leq 15$

$3x + 2y = 9$

$-3y = -6$

$y = 2$

$3x + 2(2) = 9$

$3x + 4 = 9$

$-4 \quad -4$

$3x = 5$

$x = 5/3$