

① a) $\frac{x^2-9}{x-5} \geq 0 \iff \frac{(x+3)(x-3)}{(x-5)} \geq 0$

	$-\infty$	-3	3	5	$+\infty$
$x+3$		-	+	+	+
$x-3$		-	-	+	+
$x-5$		-	-	-	+
F		-	+	-	+

$x \in [-3, 3] \cup (5, +\infty)$

b) $3x^2 - 5x + 2 < 0$
 $3(x-1)(x-2/3) < 0$

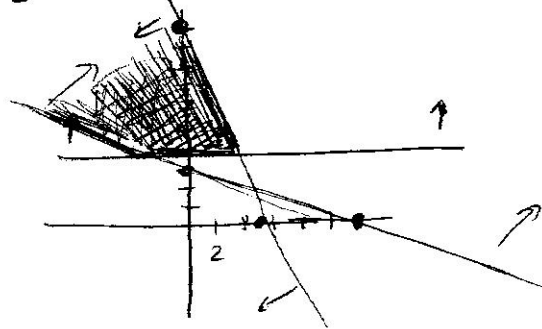
	$-\infty$	$2/3$	1	$+\infty$
$x-1$		-	+	+
$x-2/3$		-	-	+
F		+	-	+

$x \in (2/3, 1)$

c) $\frac{2(x+1)}{3} - \frac{1-x}{5} \leq x + \frac{3}{10}$

$20(x+1) - 6(1-x) \leq 30x + 9$
 $20x + 20 - 6 + 6x \leq 30x + 9$
 $-4x \leq -5$
 $x \geq 5/4$

$x \in [5/4, +\infty)$



② a) $4x + y \leq 20$
 $y \geq 8$
 $x + 2y \geq 12$

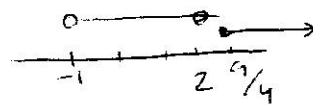
① $\begin{array}{l|l} x & 0 \quad 5 \\ y & 20 \quad 0 \end{array}$
 ② $\begin{array}{l|l} x & 0 \quad 12 \\ y & 6 \quad 0 \end{array}$

b) $-x^2 + x + 2 > 0$
 $x - 2 + 3(x-1) \geq 4$

$-(x-2)(x+1) > 0$
 $x - 2 + 3x - 3 \geq 4 \rightarrow 4x \geq 9 \Rightarrow x \geq 9/4$

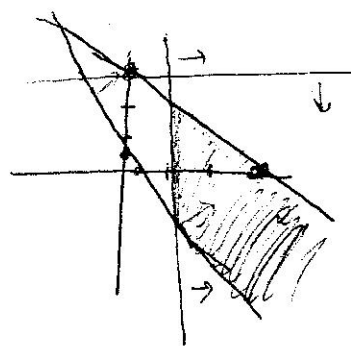
	$-\infty$	-1	2	$+\infty$
$(x-2)$		-	-	+
$(x+1)$		-	+	+
F		-	+	-

$x \in (-1, 2)$
 $x \in [9/4, +\infty)$



c) $8x + 4y \geq 2$
 $x + y < 3$
 $x \geq 1$
 $y \leq 3$

① $\begin{array}{l|l} x & 0 \quad 1/4 \\ y & 1/2 \quad 0 \end{array}$
 ② $\begin{array}{l|l} x & 0 \quad 3 \\ y & 3 \quad 0 \end{array}$



$$\textcircled{3} \quad \begin{cases} x \cdot (x-1) > 10 \\ x(x+1) < 182 \end{cases} \quad \left\{ \begin{array}{l} x^2 - x - 10 > 0 \quad x \in (-\infty; -2,70) \cup (3,70; +\infty) \\ x^2 + x - 182 < 0 \quad x \in (-14, 13) \end{array} \right.$$

Solución $x \in (-14; -2,70) \cup (3,70; 13)$

$$\textcircled{4} \quad xy < 400$$

$$P = 2x + 2y \Rightarrow 100 = 2x + 2y \Rightarrow y = 50 - x$$

$$xy < 400 \Rightarrow x(50 - x) < 400 \Rightarrow -x^2 + 50x - 400 < 0$$

$$-x^2 + 50x - 400 < 0 \Rightarrow -(x-40)(x-10) < 0$$

	-∞	10	40	+∞
(x-10)	-	+	+	-
(x-40)	-	-	+	-
I	-	+	-	-

$$x \in (-\infty, 10) \cup (40, +\infty)$$

↓

En este caso $x \in (0, 10) \cup (40, 400)$
 $y \in (0, 10) \cup (40, 400)$