

Problems of Systems of inequalities

1) Solve the following systems of inequalities:

$$\text{a) } \left. \begin{array}{l} -4x - 3 < -9x + 77 \\ 9x + 67 < 18x + 4 \end{array} \right\}$$

$$\text{b) } \left. \begin{array}{l} 7x + 62 > 14x + 6 \\ 5x + 35 < 10x + 10 \end{array} \right\}$$

$$\text{c) } \left. \begin{array}{l} 8x + 104 \geq 18x - 6 \\ 11x - 7 \geq x + 33 \end{array} \right\}$$

$$\text{d) } \left. \begin{array}{l} 4x + 8 \geq 10x + 2 \\ -9x - 48 > x + 2 \end{array} \right\}$$

$$\text{e) } \left. \begin{array}{l} -6x - 82 < 4x - 12 \\ -5x - 22 > 3x + 2 \end{array} \right\}$$

$$\text{f) } \left. \begin{array}{l} 4x - 2 \leq 8x - 2 \\ -5x + 7 < -8x - 11 \end{array} \right\}$$

2) Graph the solution to the following system of inequalities:

$$\left. \begin{array}{l} y + 5 < -x + 7 \\ -2x + 7 \geq -y + 9 \end{array} \right\}$$

3) Graph the solution to the following system of inequalities:

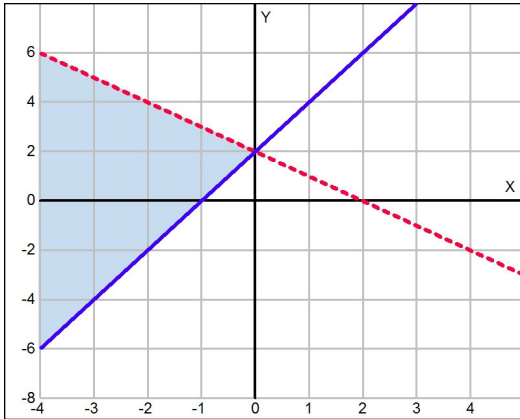
$$\left. \begin{array}{l} x - 6 \geq -y - 9 \\ -x - 6 > -y - 6 \end{array} \right\}$$

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Answers:

- 1) a) $7 < x < 16$ b) $5 < x < 8$ c) $4 \leq x \leq 11$
 d) $x < -5$ e) $-7 < x < -3$ f) No solution

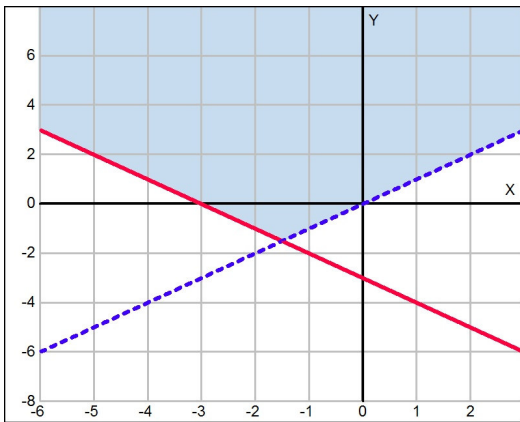
2) Graph:



Solution region:

Intersection point: $(0, 2)$.

3) Graph:



Solution region:

Intersection point: $\left(\frac{-3}{2}, \frac{-3}{2}\right)$.