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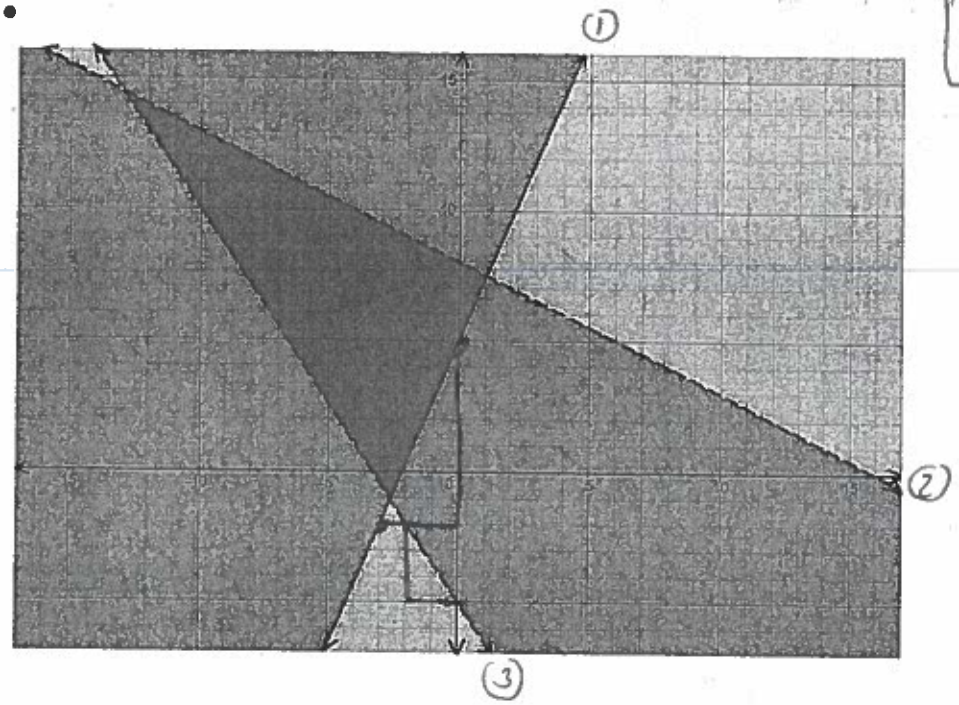
# Systems of Linear Inequalities Worksheet

**1.**

$y = mx + b$




① $y = \frac{7}{3}x + 5 \rightarrow y \geq \frac{7}{3}x + 5$

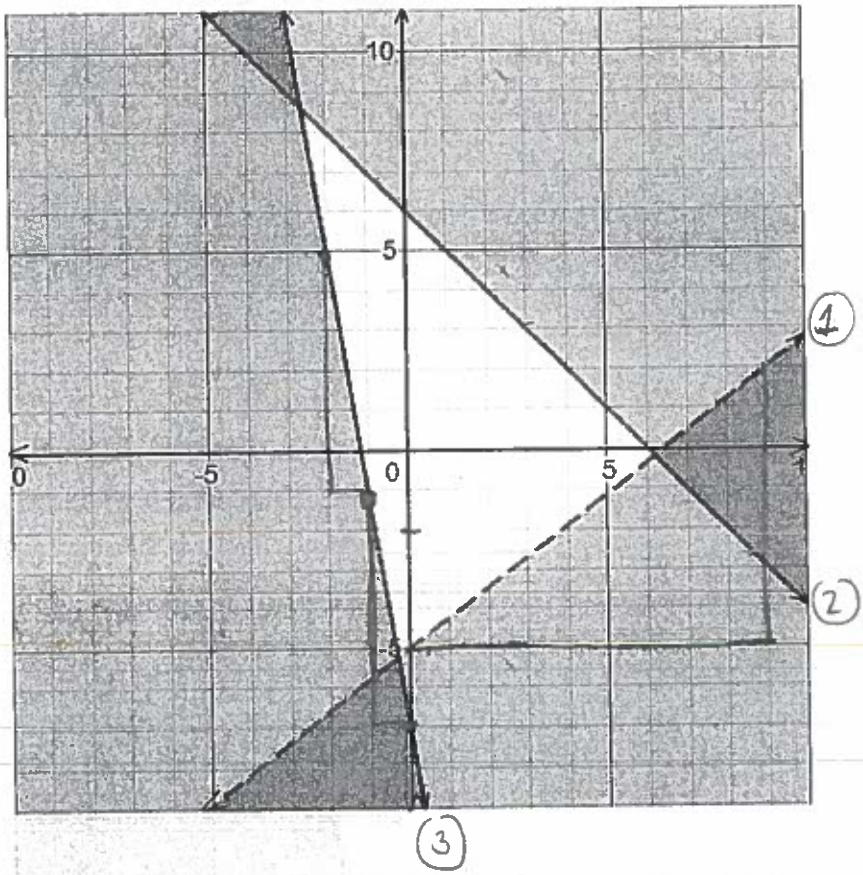
② $y = \frac{-1}{2}x + 8 \rightarrow y < -\frac{1}{2}x + 8$

③ $y = \frac{-3}{2}x - 5 \rightarrow y > \frac{-3}{2}x - 5$

∴ The solution is the region above line ① including the points on the line ①; below line ② not including the points on the line ②; and above line ③ not including the points on line ③.

**2.**

$y = mx + b$




① $y = \frac{7}{9}x - 5 \rightarrow y < \frac{7}{9}x - 5$

② $y = -x + 6 \rightarrow y \geq -x + 6$

③ $y = -6x - 7 \rightarrow y \leq -6x - 7$

∴ There is no $\mathbb{R}$ solution to the system of these linear inequalities as there is no region formed by <u>all</u> three individual solutions.

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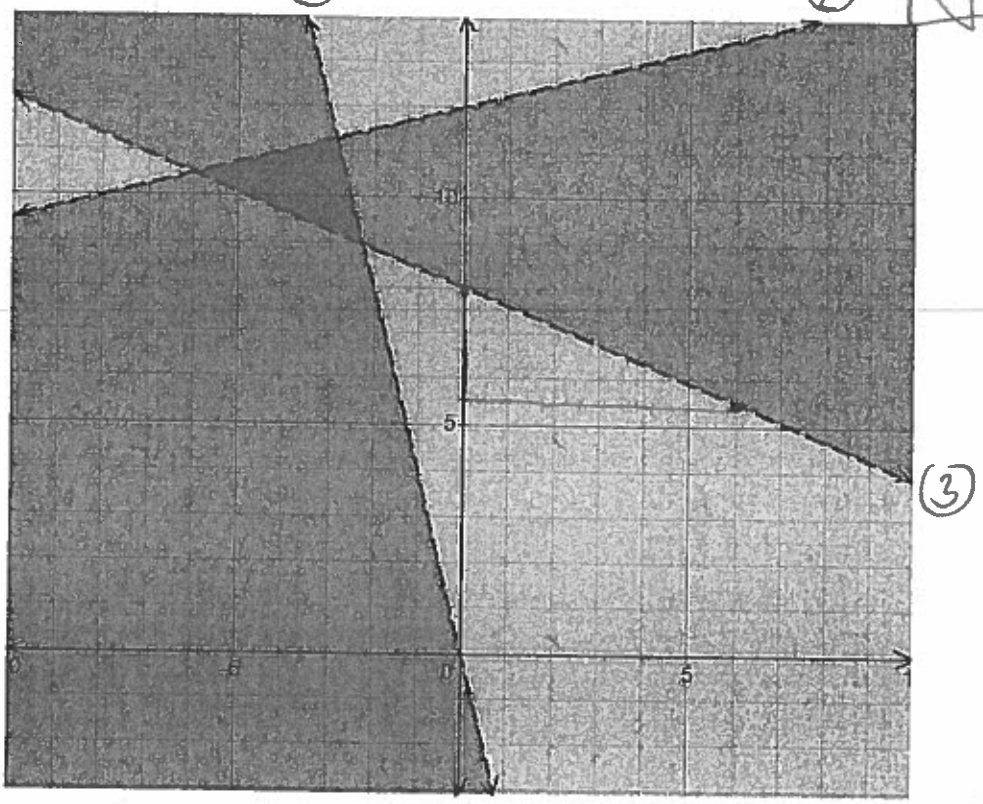
**3.**

$y = mx + b$




① $y = -4x \rightarrow y < -4x$

② $y = \frac{1}{4}x + 12 \rightarrow y < \frac{1}{4}x + 12$

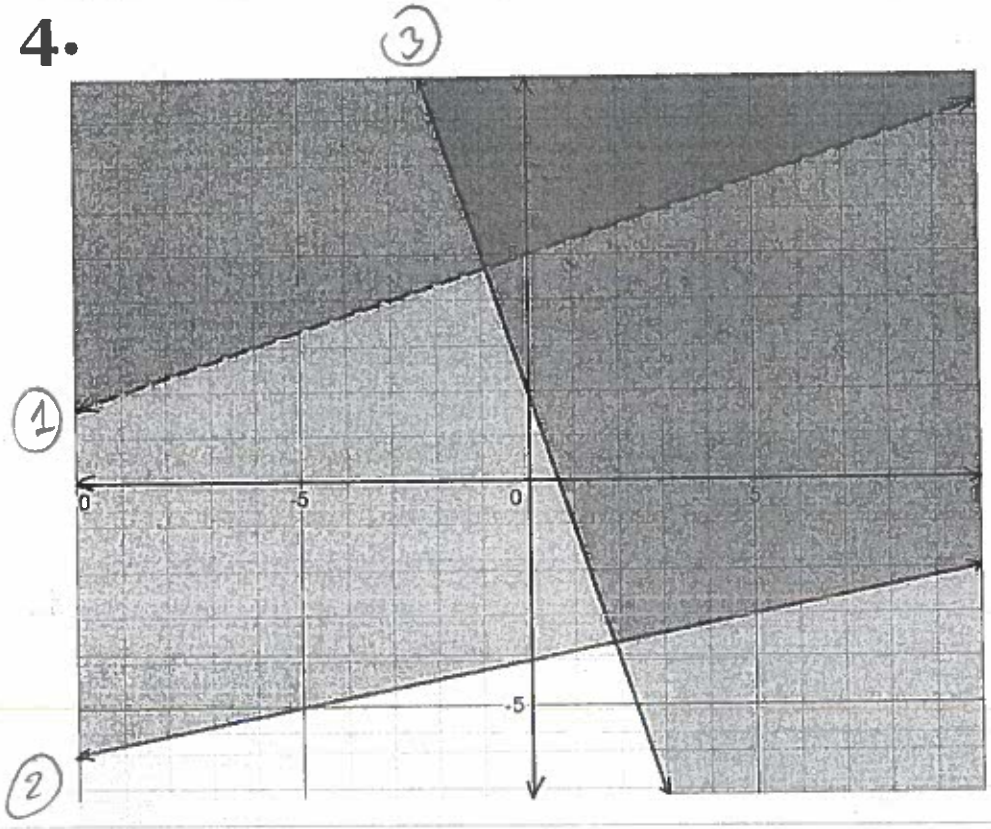
③ $y = \frac{-2.5}{6}x + 8$

$y = \frac{-5}{12}x + 8 \rightarrow y > \frac{-5}{12}x + 8$

∴ The solution region is above line ③, below line ② and below line ① and does not include points on these lines.

**4.**

$y = mx + b$




① $y = \frac{1}{3}x + 5 \rightarrow y > \frac{1}{3}x + 5$

② $y = \frac{1}{5}x - 4 \rightarrow y \geq \frac{1}{5}x - 4$

③ $y = -3x + 2 \rightarrow y \geq -3x + 2$

∴ The solution region is above line ① not including the points on the line ① and above line ③ including the points on the line ③.

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