

TOC 44

WWK

Solutions - the set of numbers that make the inequality true $x \geq 5$ Solutions 6,7,8,9..

Solution set - Set of all solutions $\{ \}$



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TOC 58 Solving Linear Inequalities Notes

Golden rule for Inequalities

Whenever you **MULTIPLY** or **DIVIDE** both sides of an inequality by a **NEGATIVE NUMBER**, you must **flip the inequality sign**.

Open circles

$<, >, \neq$

Closed circles

$\leq, \geq, =$

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Translations

x is at least 5

$$x \geq 5$$

x is at most 5

$$x \leq 5$$

x is between 5 & 7

$$5 < x < 7$$

x is no more than 5

$$x \leq 5$$

X is no less than 5

$$x \geq 5$$

Example of the Golden Rule

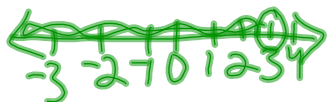
$$\begin{array}{r} 5 - 3x < -13 + x \\ \downarrow -x \qquad \qquad \qquad \cancel{-x} \\ \hline 5 - 4x < -13 \\ \downarrow -5 \qquad \qquad \qquad -5 \\ \hline -4x < -18 \\ \downarrow \cancel{-4} \qquad \qquad \qquad \cancel{-4} \\ \hline x > \frac{9}{2} \end{array}$$

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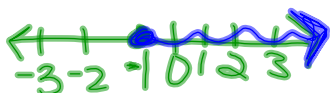
TOC page 59 Solving Linear Inequalities Examples

Example 1: Graph the solutions to each inequality.

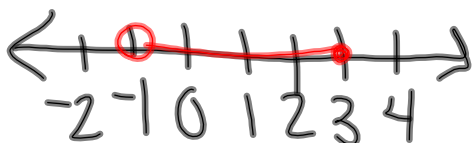
a) $x < 3$



b) $x \geq -1$



c) $-1 < x \leq 3$



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Example 2 (page 59): Solve & graph

the solution set: $4x - 7 \leq 5$

$$\begin{array}{r} 4x - 7 \leq 5 \\ +7 \quad +7 \\ \hline \end{array}$$



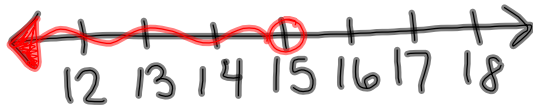
$$\begin{array}{r} 4x \leq 12 \\ \frac{4}{4} \quad \frac{12}{4} \\ \hline \end{array}$$

$x \leq 3$

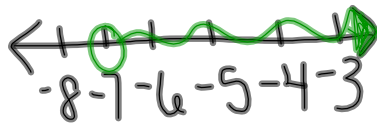
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Example 3 (page 59): Solve & graph the solution set

a) $\cancel{3} \cdot \frac{1}{3}x < 5 \cdot \cancel{3}$
 $x < 15$



b) $\frac{-3x}{-3} < \frac{21}{-3}$
 $x > -7$



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Example 4 (page 59): Solve & graph the solution set $2(x-3) + 5x \leq 8(x-1)$

$2x - 6 + 5x \leq 8x - 8$

$7x - 6 \leq 8x - 8$

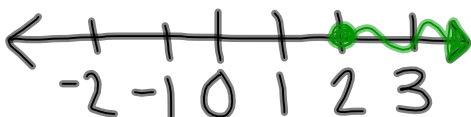
$\cancel{-7x} \downarrow \quad \cancel{-7x}$

$-6 \leq x - 8$

$+8 \quad \downarrow +8$

$2 \leq x$

$x \geq 2$



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Example 5 (page 59): To earn a B in a course, you must have a final average of at least 80%. On the first three examinations, you have grades of 82%, 74%, and 78%. If the final examination counts as two grades, what must you get on the final to earn a B in the course?

$$\frac{82+74+78+x+x}{5} \geq 80$$

$$5 \cdot \frac{234+2x}{5} \geq 80 \cdot 5$$

$$\begin{array}{r} 234+2x \geq 400 \\ -234 \quad -234 \end{array}$$

$$\frac{2x \geq 166}{2} \quad \frac{166}{2}$$

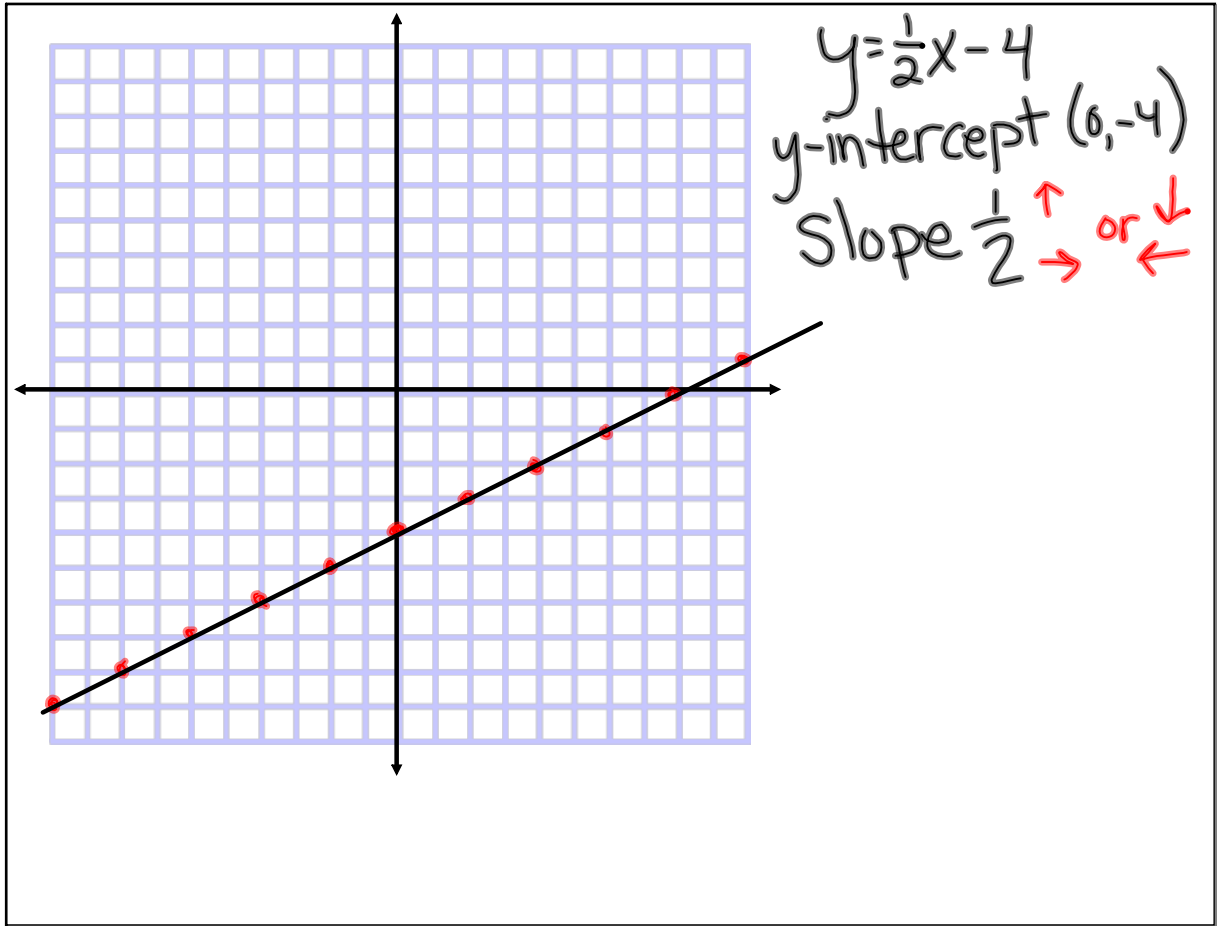
$$x \geq 83$$

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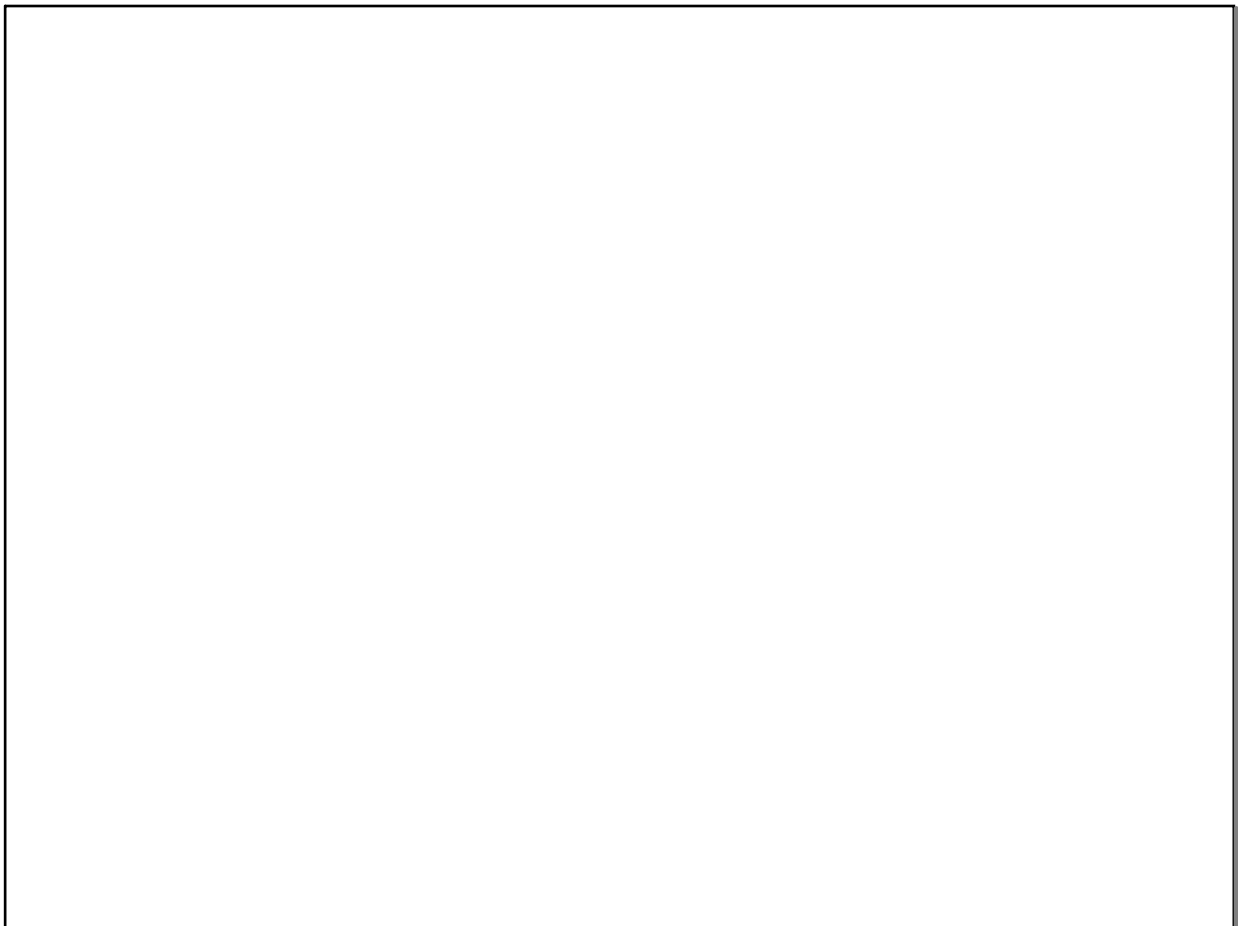
$Tx + 2 \cdot 316$ (pdf 342)
 $\# 1 - 5^{\text{th}}$
 every 3rd one

1, 4, 7, 10, 13, 16, ...

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Oct 10-11:46 AM



Oct 10-3:18 PM