Algebra Lecture 11

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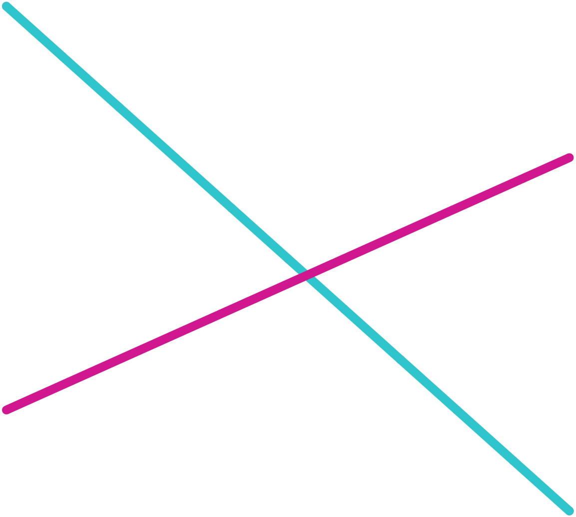
Topics

Topics Covered Thus Far

- Solving Linear Equations and Word Problems
- Solving Linear Inequalities and Word Problems
- Inequalities on the Real Number Line $\mathbb{R}^1$
- Systems of Linear Equations
- Systems of Linear Inequalities

Recall the possible ways in which two lines can be drawn in the plane $\mathbb{R}^2$.



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m_{blue} - slope of the blue line, m_{pink}- slope of the pink line.

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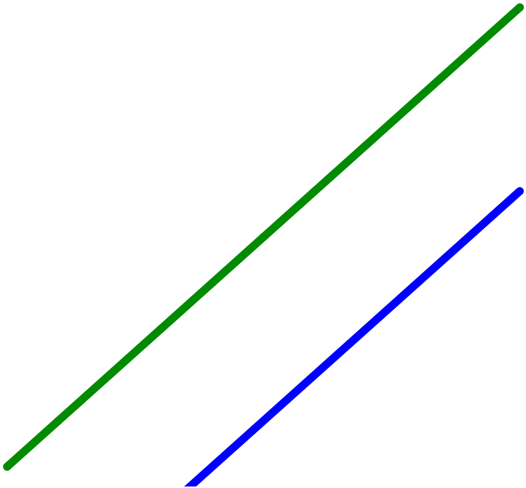
$$\heartsuit = \begin{cases} \color{magenta}{?} \\ \color{blue}{?} \end{cases}$$



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Note that the y-intercepts are different $b_{blue} \neq b_{green}$.

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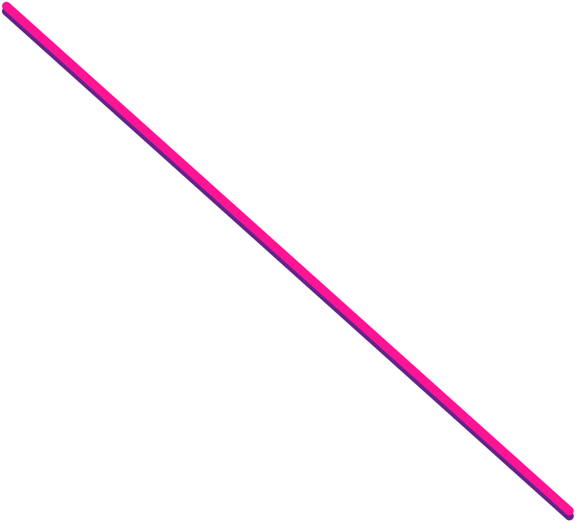

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- The pink line is **always equal** to the purple line.

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Inequalities on the Real Number Line $\mathbb{R}^1$

Symbols

( )	$<, >$	exclude endpoints
[ ]	$\leq, \geq$	include endpoints

or means union $\cup$

and means intersection $\cap$

Graph the following

$$\{x | x > 4\} \cup \{x | x > 5\}$$

Graph the following

$$\{x|x > 4\} \cap \{x|x > 5\}$$

Graph the following

$$\{x| -1 < x \leq 2\} \cup \{x|3 < x \leq 5\}$$

Graph the following

$$\{x \mid -1 < x \leq 2\} \cap \{x \mid 3 < x \leq 5\}$$

Graph the following

$$(-\infty, 3) \cap (2, 3) \cap (2.5, 3)$$