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Quick Review/Preview

1. What is the **Slope-Intercept Form**?

   $y = mx + b$

2. What is the **Standard Form**?

   $Ax + By = C$

3. What is the **Point-Slope Form**?

   $y - y_1 = m(x - x_1)$

4. Find the "negative reciprocal" of each fraction

a. $\frac{2}{5}$ $-\frac{5}{2}$ b. $\frac{3}{7}$ $-\frac{7}{3}$ c. $-\frac{1}{2}$ $\frac{2}{1} = 2$ d. $-\frac{4}{3}$ $\frac{3}{4}$

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Overview

- Parallel Lines and Perpendicular Lines
- Property of their slopes
- Write equations for each type of lines

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Parallel Lines

Parallel Lines - lines that never intersect

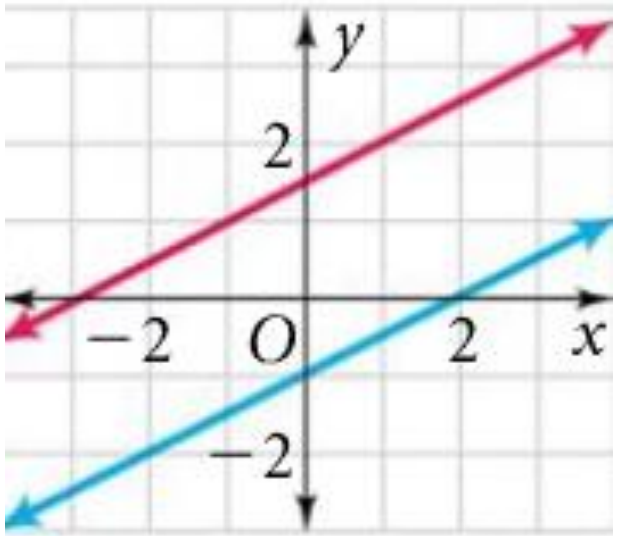
What is the slope of the
red line?

1/2

What is the slope of the
blue line?

1/2

Parallel Lines have the **same** slope!



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Parallel Lines

Determine if the lines are parallel

1. $2x + 6y = 12$ and $y = -\frac{1}{3}x + 5$

$2x + 6y = 12$

$6y = -2x + 12$

$y = -\frac{1}{3}x + 2$

yes

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Parallel Lines

Determine if the lines are parallel

2. $6x + 8y = -24$ and $y = \frac{3}{4}x - 3$

$6x + 8y = -24$

$8y = -6x - 24$

$y = -\frac{3}{4}x + 3$

No

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Parallel Lines

Determine if the lines are parallel

3. $4x + 6y = -2$ and $y = \frac{2}{3}x - 8$

$4x + 6y = -2$

$6y = -4x - 2$

$y = -\frac{2}{3}x - \frac{1}{3}$

No

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Equations of Parallel Lines

4. Write an equation for the line that contains (5, 1) and is **parallel** to $y = \frac{3}{5}x - 4$

$m = \frac{3}{5}$

$y - 1 = \frac{3}{5}(x - 5)$

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Equations of Parallel Lines

5. Write an equation for the line that contains (2, -6) and is **parallel** to $y = 3x + 9$

$m = 3$

$y + 6 = 3(x - 2)$

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Equations of Parallel Lines

6. Write an equation for the line that contains (-4, 3) and is **parallel** to $y = \frac{1}{2}x + 7$

$m = \frac{1}{2}$

$y - 3 = \frac{1}{2}(x + 4)$

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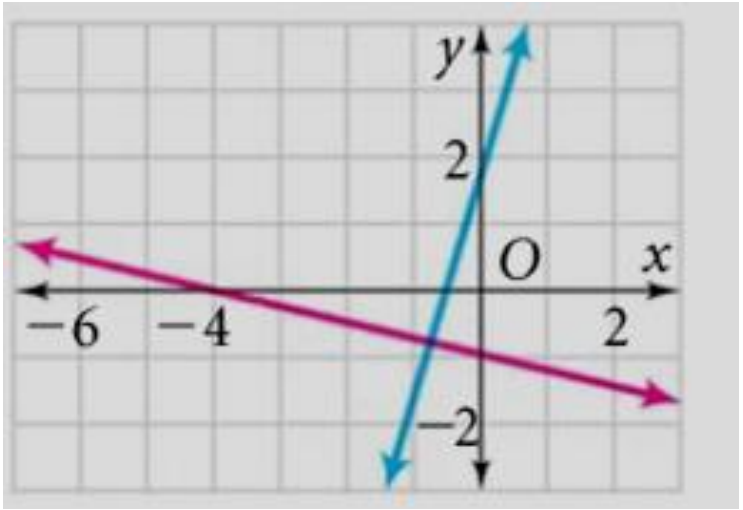
Perpendicular Lines

Perpendicular Lines – lines that intersect to form right angles



What is the slope of the red line?

-1/4

What is the slope of the blue line?

4/1

Perpendicular Lines have negative reciprocal slope!

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Perpendicular Lines

What is the slope of the perpendicular line?

7. $y = \frac{2}{5}x - 8$ -5/2

8. $y = -\frac{1}{5}x$ 5/1 = 5

9. $y = -2x - 7$ 1/2

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Equations of Perpendicular Lines

10. Find the equation of the line that contains (0, -2) and is perpendicular to $y = 5x + 3$

$m =$

$$-\frac{1}{5}$$

$$y + 2 = -\frac{1}{5}x$$

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Equations of Perpendicular Lines

11. Find the equation of the line that contains (1, 8) and is perpendicular to

$$y = \frac{3}{4}x + 1$$

$m = -\frac{4}{3}$

$$y - 8 = -\frac{4}{3}(x - 1)$$

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Equations of Perpendicular Lines

12. Find the equation of the line that contains (2, -3) and is perpendicular to

$$y = -\frac{1}{2}x + 6$$

$m = 2$

$y + 3 = 2(x - 2)$

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Perpendicular Lines

13. Determine if the lines are perpendicular:

$y = \frac{2}{3}x + 1$ and $3y + 2x = 4$

$3y + 2x = 4$

$3y = -2x + 4$

$y = -\frac{2}{3}x + \frac{4}{3}$

No

14. Determine if the lines are perpendicular:

$y = \frac{4}{3}x - 5$ and $4y + 3x = 9$

$4y + 3x = 9$

$4y = -3x + 9$

$y = -\frac{3}{4}x + \frac{9}{4}$

Yes

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Challenge

- What is the slope of the line that is parallel to x = 4?

  undefined

- What is the slope of the line that is perpendicular to x = 4?

  zero