

1. Find the slope of the line passing through  $(-3, -2)$  and  $(2, 5)$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - (-2)}{2 - (-3)} = \frac{5 + 2}{2 + 3} = \boxed{\frac{7}{5}}$$

2. Find the slope of the line passing through  $(-6, -3)$  and  $(4, -3)$ .

$$m = \frac{-3 - (-3)}{4 - (-6)} = \frac{-3 + 3}{4 + 6} = \frac{0}{10} = \boxed{0}$$

3. Find the slope of the line passing through  $(3, 1)$  and  $(3, -5)$ .

$$m = \frac{-5 - 1}{3 - 3} = \frac{-6}{0} \quad \boxed{\text{undefined}}$$

4. Find the slope of the line:  $5x + 2y = 7$

$$\begin{aligned} & \frac{-5x}{2} = \frac{-5x}{2} \\ & \frac{2y}{2} = \frac{-5x - 7}{2} \\ & y = -\frac{5}{2}x - \frac{7}{2} \\ & \quad \uparrow \text{slope: } \boxed{-\frac{5}{2}} \end{aligned}$$

5. Determine whether the following pair of lines is parallel, perpendicular, or neither.

$$3x - 5y = -1$$

$$5x + 3y = 2$$

$$3x - 5y = -1$$

$$-5y = -3x - 1$$

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

$$\text{Slope: } \frac{3}{5}$$

$$5x + 3y = 2$$

$$3y = -5x + 2$$

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

$$\text{Slope: } -\frac{5}{3}$$

Negative reciprocals, so  $\boxed{\text{perpendicular}}$

6. Determine whether the following pair of lines is parallel, perpendicular, or neither.

$$y = -5x + 2$$

$$y = -5x - 3$$

Both have slope  $-5$ ,  
so **parallel**.

Q: The following number is the only one of its kind. 8,549,176,320 Can you figure out what is so special about it?