Write each of these equations in Slope-Intercept Form:

1. $y - 6 = -4(x + 3)$

$y - 6 = -4x - 12$

$+6 \quad +6$

$y = -4x - 6$

2. $8x - 12y = 30$ $-8x$

$-8x$

$\frac{-12y}{-12} = \frac{30 - 8x}{-12}$

$y = -2.5 + \frac{2}{3}x$

Find the slope and intercepts for each line.

1. $y = 2x - 5$

$m = 2$

x-int $= 2.5$

$0 = 2x - 5$

y-int $= -5$

2. $4x + 10y = 24$

$m = \frac{-4}{10} = -\frac{2}{5}$

x-int $= 4x = 24 \quad x = 6$

y-int $= 10y = 24$

$y = 2.4$

Write this equation in Standard Form:

$y = \frac{7}{6}x - \frac{9}{4}$

$-\frac{7}{6}x \quad -\frac{7}{6}x$

$\left(-\frac{7}{6}x + y = -\frac{9}{4}\right)12$

$-14x + 12y = -27$

$Ax + By = C$

Without graph how can you tell if these points collinear?

A (-2,6) B (0,2) C (1,0)

m of $\overline{AB} = \frac{6-2}{-2-0} = \frac{4}{-2} = -2$

m of $\overline{BC} = \frac{0-2}{1-0} = -2$

Since the slope of $\overline{AB}$ is the same as the slope of $\overline{BC}$ and these are connected by Point B they must all lie on the same line.

Parallel and Perpendicular Lines:

Two lines are parallel if:
1. They have the same slope
2. They have different y-intercepts

Two lines are perpendicular if:
1. They have the slopes that are opposite reciprocals
2. The y-intercept doesn't matter!

Is each pair of lines parallel, perpendicular or neither?

1. $y = 6x - 5$
   $y = -4 + 6x$

2. $y = \frac{1}{3}x + 7$
   $y = 3x + 13$

3. $y = 4x - 1$
   $y = -4x + 8$

4. $y = 8x + 1$
   $8x - 4y = 12$

5. $y = -4x + 3$
   $2x + 8y = 24$

6. $y = 2x - 5$
   $6x - 3y = 15$

Is each pair of lines parallel, perpendicular or neither?

1. $y = 6x - 5$ $m = 6$ $b = -5$
   $y = -4 + 6x$ $m = 6$ $b = -4$

Parallel

Slopes are the same and they have different y-intercepts.

2. $y = \frac{1}{3}x + 7$ $m = 1/3$
   $y = 3x + 13$ $m = 3$

NEITHER

Slopes are reciprocals but not opposites.

3. $y = 4x - 1$ $m = 4$
   $y = -4x + 8$ $m = -4$

Neither

Slopes are opposites but not reciprocals

4. $y = 8x + 1$
   $8x - 4y = 12$

$y = \frac{12 - 8x}{-4} = -3 + 2x$

Slopes are not the same or opposite reciprocals

Neither

5. $y = -4x + 3$
$2x + 8y = 24$

$y = \frac{24 - 2x}{8}$

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

Slopes are reciprocals but not opposites.

Neither

6. $y = 2x - 5$
$6x - 3y = 15$

$\frac{-3y}{-3} = \frac{15 - 6x}{-3}$

$y = -5 + 2x$

Same slope and y-intercept means they are the same line.

Neither