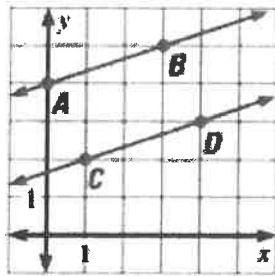


$$\frac{y_2 - y_1}{x_2 - x_1}$$

1. Find the slope of each line. Which lines are parallel?

a.

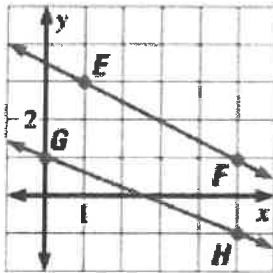


$$m_{AB} = \frac{1}{3}$$

$$m_{CD} = \frac{1}{3}$$

parallel

b.

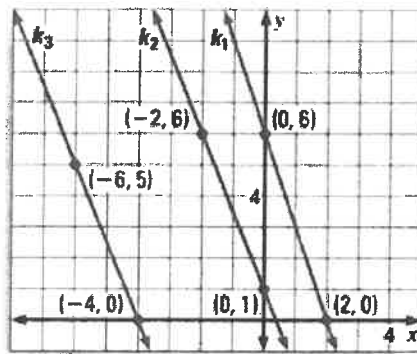


$$m_{EF} = -\frac{1}{2}$$

$$m_{GH} = -\frac{2}{5}$$

not parallel

c.



$$m_{k_1} = -\frac{6}{2} = -3$$

$$m_{k_2} = -\frac{5}{2}$$

$$m_{k_3} = -\frac{5}{2}$$

$k_2 \parallel k_3$

2. Find the slopes of  $\overleftrightarrow{AB}$ ,  $\overleftrightarrow{CD}$ , and  $\overleftrightarrow{EF}$ . Determine which lines are parallel, if any.

A(0, -6) B(4, -4)

C(0, 2) D(2, 3)

E(0, -4) F(1, -7)

$$\frac{y_2 - y_1}{x_2 - x_1} = m$$

$$m_{AB} = \frac{-4 - (-6)}{4 - 0} = \frac{-4 + 6}{4} = \frac{2}{4} = \frac{1}{2}$$

$$m_{CD} = \frac{3 - 2}{2 - 0} = \frac{1}{2}$$

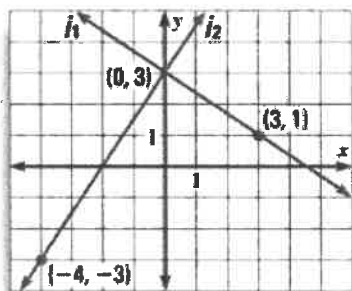
$\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$

$$m_{EF} = \frac{-7 - (-4)}{1 - 0} = -3$$

Parallel and Perpendicular Lines in Coordinate Plane

3. Find the slope of each line. Which lines are ~~parallel~~ <sup>perpendicular</sup>?

a.

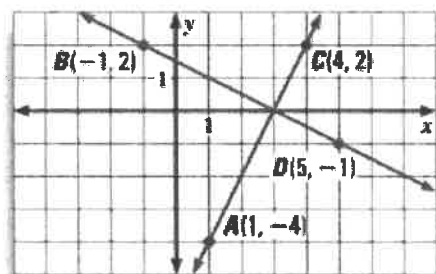


$$m_{l_1} = -\frac{2}{3}$$

$$m_{l_2} = \frac{3}{2}$$

perpendicular

b.

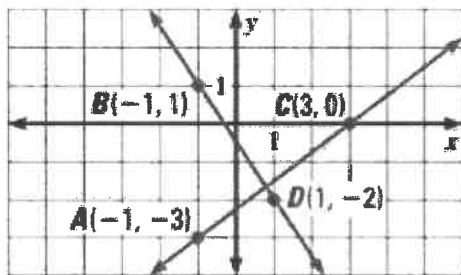


$$m_{BD} = -\frac{2}{4} = -\frac{1}{2}$$

$$m_{AC} = 2$$

perpendicular

c.



$$m_{BD} = -\frac{3}{2}$$

$$m_{AC} = \frac{3}{4}$$

not perpendicular

4. Determine whether the lines are parallel, perpendicular, or neither:

$$3x - 2y = 1$$

$$6x + 9y = 3$$

$$3x - 2y = 1$$

$$\begin{aligned} -2y &= -3x + 1 \\ \frac{-2y}{-2} &= \frac{-3x + 1}{-2} \\ y &= \frac{3}{2}x - \frac{1}{2} \end{aligned}$$

$$m = \frac{3}{2}$$

$$6x + 9y = 3$$

$$-6x \quad -6x$$

$$\frac{9y}{9} = \frac{-6x + 3}{9}$$

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

$$m = -\frac{2}{3}$$

perpendicular

Geometry CP  
Parallel and Perpendicular Lines in Coordinate Plane

5. Solve the following systems using any method:

a.  $2y - 5x = -1$

$x = 2y + 5$

$$2y - 5(2y + 5) = -1$$

$$2y - 10y - 25 = -1$$

$$-8y - 25 = -1$$

$$+25 \quad +25$$

$$-8y = 24$$

$$y = -3$$

$$x = 2(-3) + 5$$

$$x = -1$$

$$(-1, -3)$$

b.  $8x + y = -16$

$(-3x + y = -5) - 1$

$$8x + y = -16$$

$$3x - y = 5$$

---

$$11x = -11$$

$$x = -1$$

$$8(-1) + y = -16$$

$$+8$$

$$+8$$

$$y = -8$$

$$(-1, -8)$$

