

Homework 10-2: Partitioning a Segment

1. Find the coordinates of the point P that lies along the directed segment from $C(-3, -2)$ to $D(6, 1)$ and partitions the segment in the ratio 2 to 1.

$$P(3, 0)$$

2. Find the coordinates of the point P that lies along the directed segment from $R(-3, -4)$ to $S(5, 0)$ and partitions the segment in the ratio 2 to 3.

$$P(1/5, -12/5)$$

3. Find the coordinates of the point P that lies along the directed segment from $J(-2, 5)$ to $K(2, -3)$ and partitions the segment in the ratio 4 to 1.

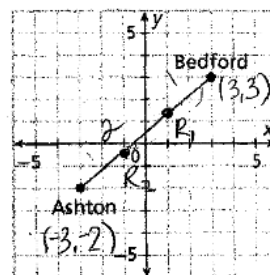
$$P(6/5, -7/5)$$

4. Find the coordinates of the point P that lies along the directed segment from $M(5, -2)$ to $N(-5, 3)$ and partitions the segment in the ratio 1 to 3.

$$P(5/2, -3/4)$$

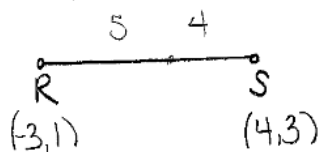
5. The map shows a straight highway between two towns. Highway planners want to build two new rest stops between the towns so that the two rest stops divide the highway into three equal parts. Find the coordinates of the points at which the rest stops should be built.

$$R_1(1, 4/3); R_2(-1, -1/3)$$



6. \overleftrightarrow{RS} passes through $R(-3, 1)$ and $S(4, 3)$. Find a point P on \overleftrightarrow{RS} such that the ratio of RP to SP is 5 to 4. Is there more than one possibility? Explain.

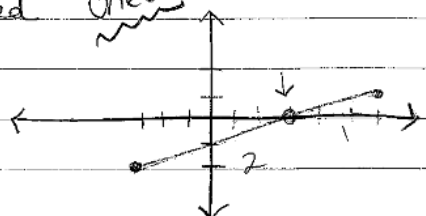
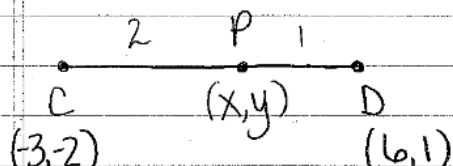
$$(8/9, 19/9)$$



HW 10-2

"Directed" check

①



$$x: \quad \frac{2}{1} = \frac{x - (-3)}{6 - x}$$

$$y: \quad \frac{2}{1} = \frac{y - (-2)}{1 - y}$$

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

$$12 - 2x = x + 3$$

$$\underline{-3 + 2x \quad + 2x - 3}$$

$$\frac{9}{3} = \frac{3x}{3}$$

$$3 = x$$

$$3 = x$$

$$\boxed{P(3, 0)}$$

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

$$2 - 2y = y + 2$$

$$\underline{-2 + 2y \quad + 2y - 2}$$

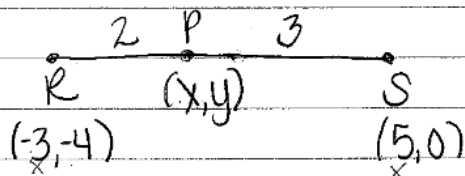
$$\frac{0}{3} = \frac{3y}{3}$$

$$0 = y$$

$$0 = y$$

②

$$m = \frac{4 - \frac{1}{2}}{8 - 2}$$



$$\boxed{P(1/5, -12/5)}$$

$$x: \quad \frac{2}{3} = \frac{x - (-3)}{5 - x}$$

$$y: \quad \frac{2}{3} = \frac{y - (-4)}{0 - y}$$

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

$$10 - 2x = 3x + 9$$

$$\underline{-9 + 2x \quad + 2x - 9}$$

$$\frac{1}{5} = \frac{5x}{5}$$

$$\frac{1}{5} = \frac{5x}{5}$$

$$x = 1/5$$

$$2(0 - y) = 3(y + 4)$$

$$-2y = 3y + 12$$

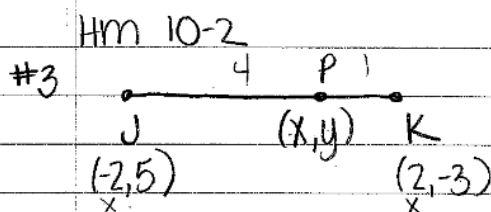
$$\underline{-3y \quad - 3y}$$

$$-5y = 12$$

$$\frac{-5y}{-5} = \frac{12}{-5}$$

$$y = -12/5$$

1 1 1 1



check

$$m_{JK} = \frac{-8}{4} = -2$$

$$m_{PK} = \frac{-1.6}{.8} = -2$$

$$x: \frac{4}{1} = \frac{x - (-2)}{2 - x}$$

$$4(2 - x) = 1(x + 2)$$

$$8 - 4x = x + 2$$

$$-2 + 4x + 4x - 2$$

$$\frac{6}{5} = \frac{5x}{5}$$

$$x = 6/5$$

$$y: \frac{4}{1} = \frac{y - 5}{-3 - y}$$

$$4(-3 - y) = 1(y - 5)$$

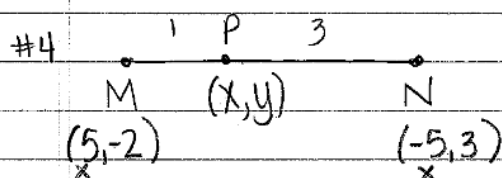
$$-12 - 4y = y - 5$$

$$+5 + 4y + 4y + 5$$

$$\frac{-7}{5} = \frac{5y}{5}$$

$$y = -7/5$$

$$P(6/5, -7/5)$$



$$x: \frac{1}{3} = \frac{x - 5}{-5 - x}$$

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

$$-5 - x = 3x - 15$$

$$+15 + x + x + 15$$

$$\frac{10}{4} = \frac{4x}{4}$$

$$\frac{5}{2} = x$$

$$y: \frac{1}{3} = \frac{y - (-2)}{3 - y}$$

$$1(3 - y) = 3(y + 2)$$

$$3 - y = 3y + 6$$

$$-6 + y + y + 6$$

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

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

HW 10-2

#5

A $\xrightarrow{\quad\quad\quad}$ B
 $(-3,2)$ (X,Y) $(3,3)$

$$x: \frac{2}{1} = \frac{x-(-3)}{3-x}$$

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

$$6-2x = x+3$$

$$\underline{-3+2x+2x-3}$$

$$\frac{3}{3} = \frac{3x}{3}$$

$$1=x$$

$$R_1 = (1, 4|3)$$

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

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

$$6-2y = y+2$$

$$\underline{-2+y+2y-2}$$

$$\frac{4}{3} = \frac{3y}{3}$$

$$1.3=y$$

$$R_2 \left(\frac{-3+1}{2}, \frac{-2+4}{2} | 3 \right)$$

$$\left(-2|2 \quad -2|3 \right)$$

$$R_2 = (-1, -1|3)$$

#6

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

$$5(4-x) = 4(x+3)$$

$$20-5x = 4x+12$$

$$\underline{-12+5x+5x-12}$$

$$\frac{8}{9} = \frac{9x}{9}$$

$$x = 8/9$$

$$\frac{5}{4} = \frac{y-1}{3-y}$$

$$15-5y = 4y-4$$

$$\underline{+4+5y+5y+4}$$

$$\frac{19}{9} = \frac{9y}{9}$$

$$19/9 = y$$

Lesson 4: Writing Equations of Lines

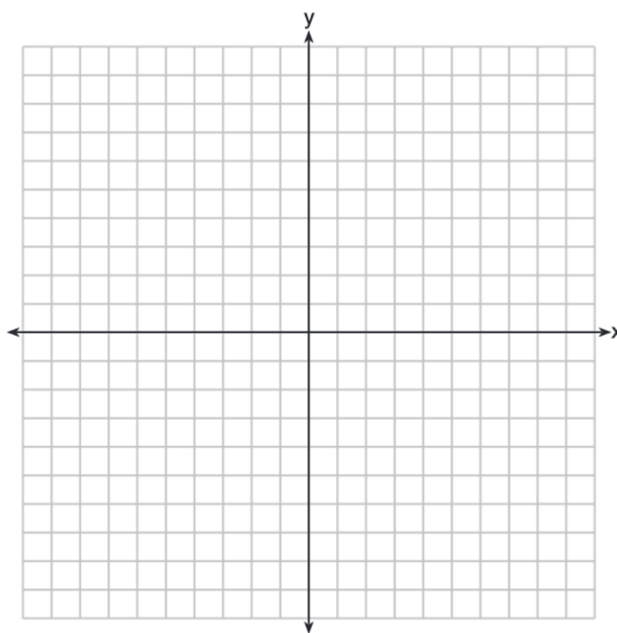
Warm-up:

1. Given the endpoints of the diameter \overline{AB} , $A(-7, -1)$ and $B(1, 5)$, determine the center and radius of the circle.

Center: _____

Radius: _____

2. The coordinates of the endpoints of \overline{AB} are $A(-6, -5)$ and $B(4, 0)$. Point P is on \overline{AB} . Determine and state the coordinates of point P, such that $AP:PB$ is 2:3. [The use of the set of axes below is optional]



Writing Equations of LinesSlope-Intercept Form of a LineThe equation of a line with slope m and y-intercept b is

$$y = mx + b$$

★ Point-Slope Form of a Line

★ Start with ★

The equation of a line with slope m that passes through the point (x_1, y_1) is

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

Determine the equation of the line in point-slope form and then transform the equation into slope-intercept form:

1. $m = -3; (-3, 8)$

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

PSF $y - 8 = -3(x - (-3))$

$$y - 8 = -3x - 9$$

SIF $y = -3x - 1$

4. $(-2, 4)$ and $(8, -4)$

$$① m = \frac{\Delta y}{\Delta x} = \frac{-4 - 4}{8 - (-2)} = \frac{-8}{10} = -\frac{4}{5} = m$$

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

$$y - 4 = -\frac{4}{5}(x - (-2)) \text{ P.S.F.}$$

$$y - 4 = -\frac{4}{5}x - \frac{8}{5}$$

$$y = -\frac{4}{5}x - \frac{12}{5}$$

2. $m = \frac{5}{8}; (16, 7)$

$$y - 7 = \frac{5}{8}(x - 16) \text{ PSF}$$

$$y - 7 = \frac{5}{8}x - 10$$

SIF $y = \frac{5}{8}x - 3$

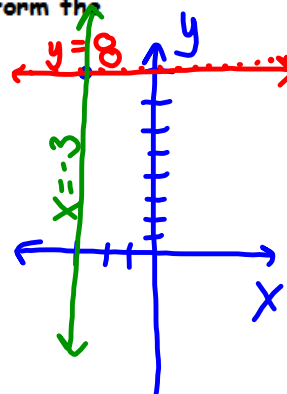
5. $(5, 0)$ and $(0, -3)$

$$x = \square$$

$$y = \square$$

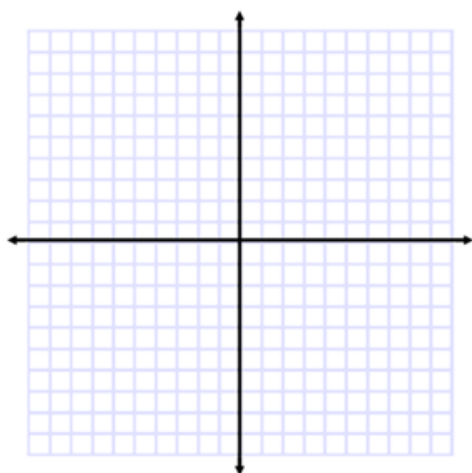
3. $m = 0; (-3, 8)$

$m = \text{und.}$

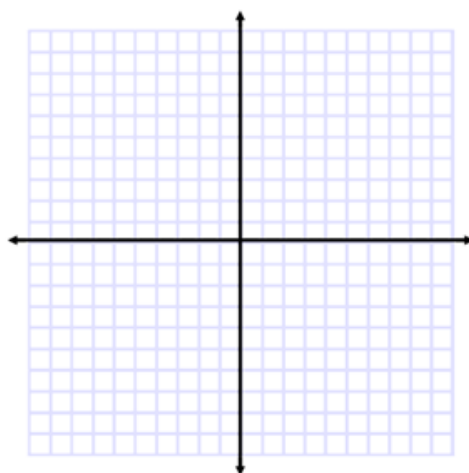
math
enter 2x

Graph:

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

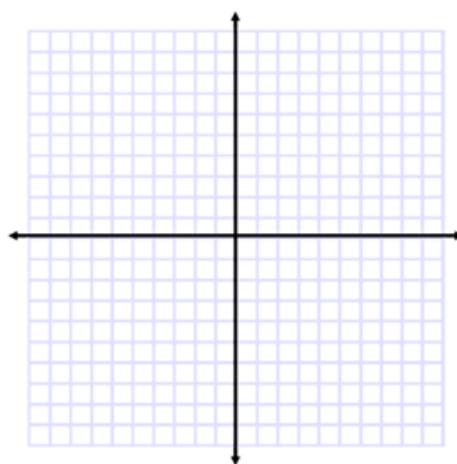
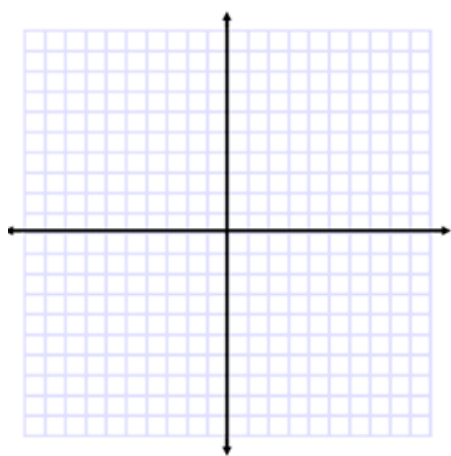


3. $5x + 3y = 15$



2. $y - 3 = 2(x - 4)$

4. $2x - 6y = 12$



5. $y = 3$ and $x = 3$

