BECA / Dr. Huson / Geometry
Unit 9: Algebra
29 March 2022

Name: Solutions

9.7 Linear & quadratic functions on the coordinate plane

1. Graph and label the two equations. Mark their intersection as an ordered pair.

$y = -4x - 6$

$x - 3y = -21$

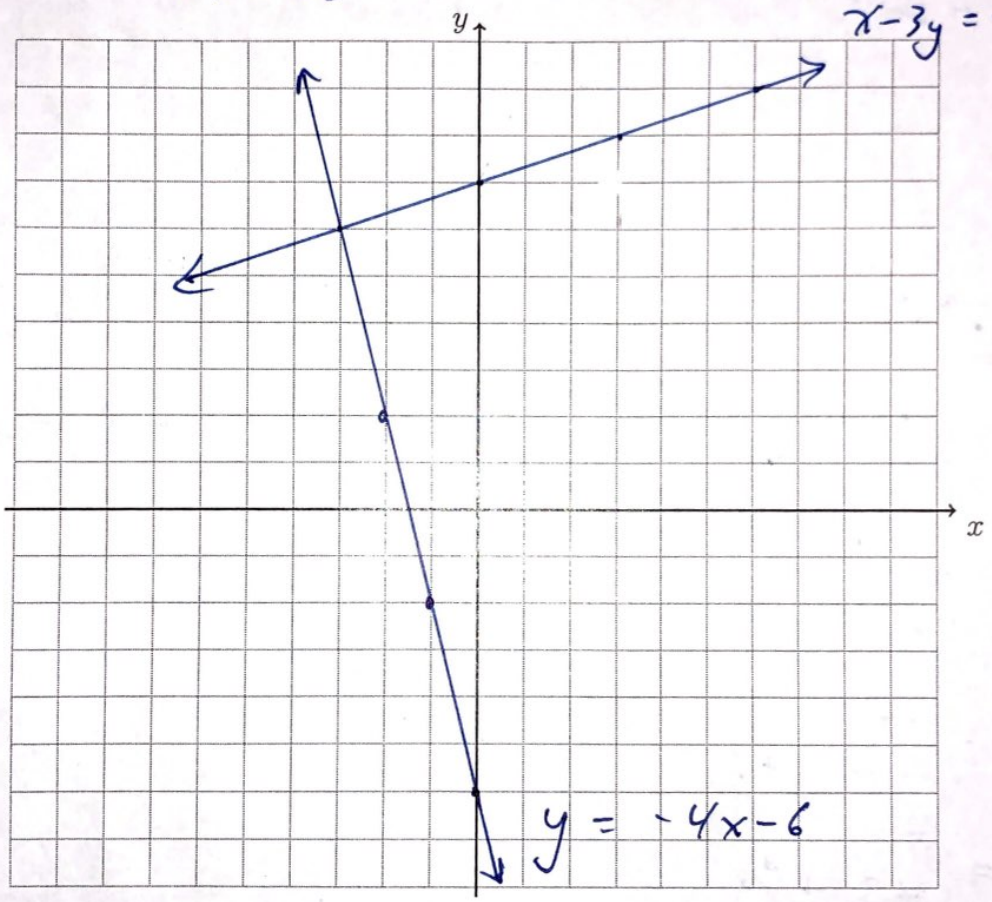
$-3y = -x - 21$

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

Are the lines parallel, perpendicular, or neither? Justify your answer.

Neither. $m_1 = -4$, $m_2 = \frac{1}{3}$

$m_1 \neq m_2$ $\quad m_1 \cdot m_2 = (-4)\left(\frac{1}{3}\right) \neq -1$



2. The line l has the equation $y = 3x + 2$.

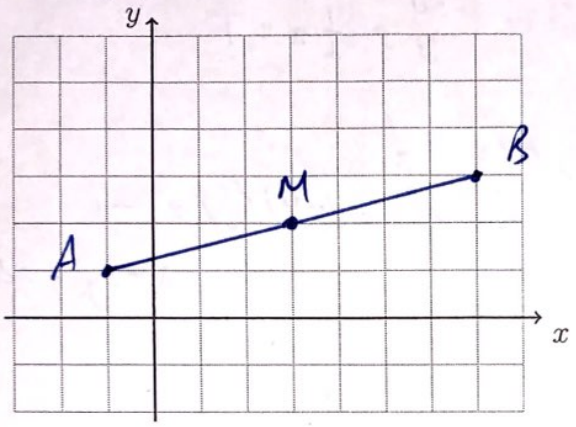
   (a) What is the slope of the line k, given $k \parallel l$?

   3

   (b) What is the slope of the line m, given $m \perp l$?

   $-\frac{1}{3}$

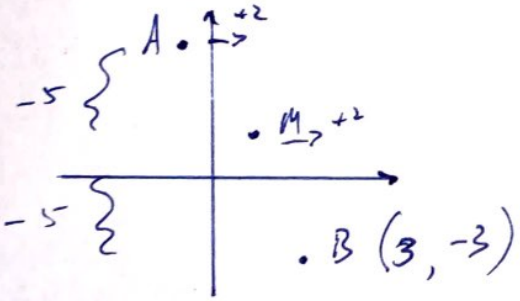
3. On the graph below, draw $\overline{AB}$, with $A(-1,1)$ and $B(7,3)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



$M = \left(\frac{-1+7}{2}, \frac{1+3}{2}\right)$

$= (3, 2)$

4. $A(-1,7)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(1,2)$. Find the other endpoint, B.



$M = \left(\frac{-1+x}{2}, \frac{7+y}{2}\right) = (1, 2)$

$(x, y) = (3, -3)$

5. In the diagram below, $\overline{AC}$ has endpoints with coordinates $A(-6,-3)$ and $C(6,3)$. If B is a point on $\overline{AC}$ and $AB{:}BC = 1{:}3$, what are the coordinates of B?

$\frac{1}{4} : \frac{3}{4}$

$A \to C : T_{+12, +6}$

$\frac{1}{4} T = T_{+3, +3/2}$

$A(-6, -3) \xrightarrow{T_{+3, +3/2}} B\left(-3, -\frac{3}{2}\right)$