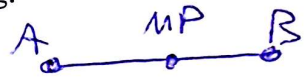


Part B: Short Answer. Show your work in the space provided. (7 marks)

1. A line segment has endpoints at A(8,-3) and B(-5,7). Find the following:

a) The midpoint of AB. (1 mark)



$$\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \quad \frac{8 + (-5)}{2}, \frac{-3 + 7}{2}$$

$$\left(\frac{3}{2}, \frac{-4}{2}\right) \Rightarrow \left(\frac{3}{2}, -2\right)$$

b) The slope of AB. (1 mark)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - (-3)}{-5 - 8} = \frac{10}{-13} \quad m = -\frac{10}{13}$$

c) The distance of AB as an exact value. (1 mark)

→ figure out the √

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(-5 - 8)^2 + (7 - (-3))^2}$$

$$= \sqrt{(-13)^2 + (10)^2}$$

$$\sqrt{169 + 100}$$

$$\sqrt{269} = 16.4$$

2. Given that m_1 is perpendicular to m_2 where $m_1 = 5$, find m_2 . (1 mark)

⊥ slopes are negative reciprocal of each other

$$m_1 \times m_2 = -1$$

$$5 \times \frac{-1}{5} = \frac{-5}{5} = -1$$

$$m_2 = \frac{-1}{5}$$

3. Given the equation $2x - 5y - 10 = 0$ complete the following:

a) Solve the equation for y. (1 mark)

$$2x - 5y - 10 = 0$$

$$\frac{5y}{5} = \frac{2x - 10}{5} \Rightarrow y = \frac{2}{5}x - 2$$

b) State the slope. (1 mark)

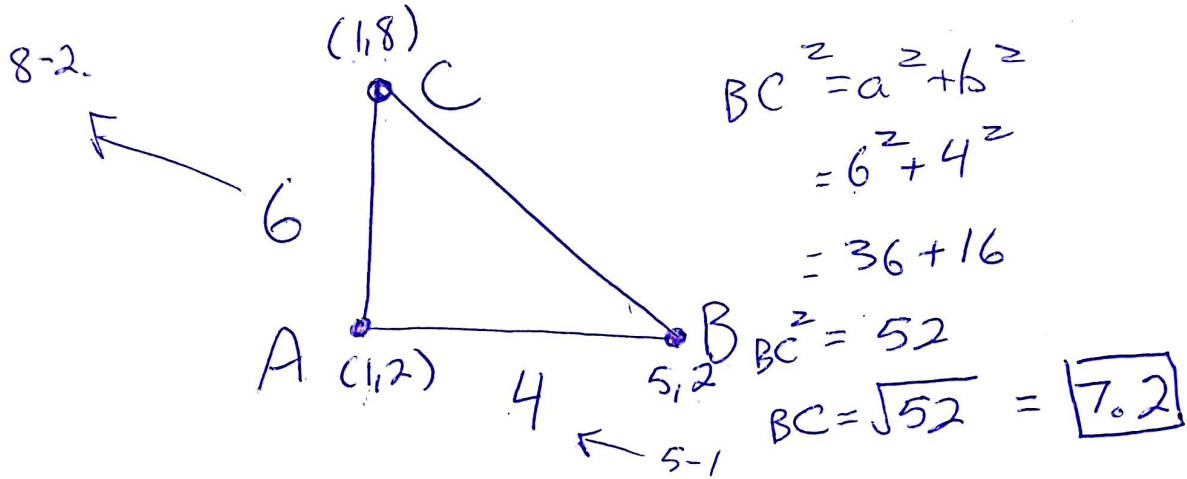
$$m = \frac{2}{5}$$

c) State the y-intercept. (1 mark)

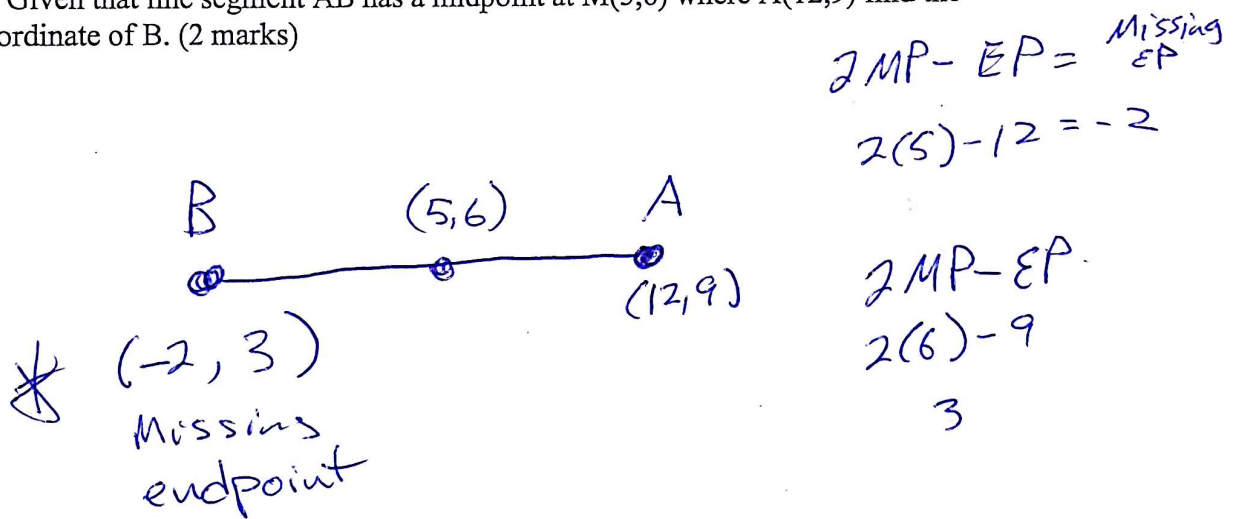
$$b = -2$$

Part C. Long Answer. Be sure to show all your work to gain full marks.

1. Given the triangle ABC, where A(1,2), B(5,2) and C(1,8) find the perimeter of the shape as an exact value. You may wish to draw a diagram to help you. (3 marks)



2. Given that line segment AB has a midpoint at M(5,6) where A(12,9) find the coordinate of B. (2 marks)



3. Find the equation of a line that has a slope of $\frac{3}{7}$ and passes through (2,3) in standard form. (3 marks)

4. Find the equation of the line that has a slope of -3 and has a y-intercept of 5.

$$y = mx + b$$

\downarrow m \rightarrow b

Plug it in



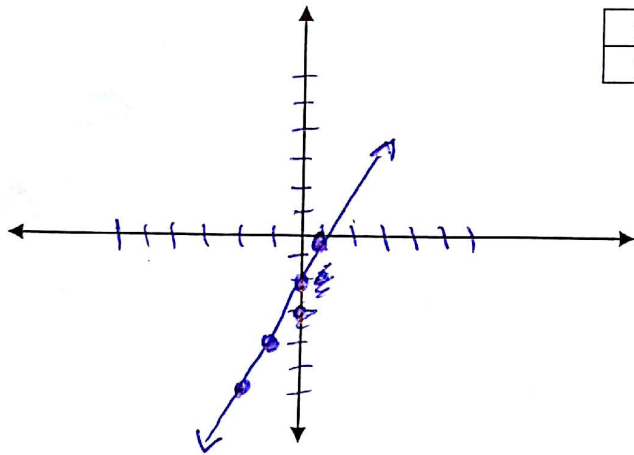
$$y = -3x + 5$$

7. Given the following lines sketch a graph of each on the grid provided using the method stated:

a) Using the table provided sketch $2x - y = 2$. (2.5 marks)

$$y = 2x - 2$$

x	-2	-1	0	1
y	-6	-4	-2	0

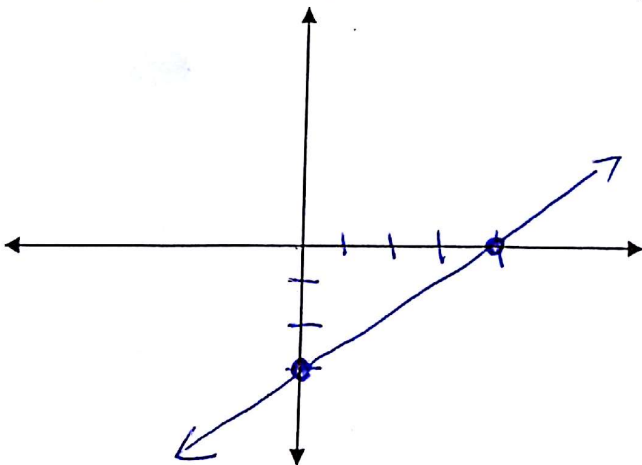


$$\begin{aligned} 2(-2) - 2 &= -6 \\ 2(-1) - 2 &= -4 \\ 2(0) - 2 &= -2 \\ 2(1) - 2 &= 0 \end{aligned}$$

b) Using the intercepts method, sketch $3x - 4y - 12 = 0$. (2.5 marks)

sub = $x=0 \rightarrow$ find y

sub = $y=0 \rightarrow$ find x



$$3(0) - 4y - 12 = 0$$

$$\begin{aligned} -4y &= 12 \\ \frac{-4y}{-4} &= \frac{12}{-4} \end{aligned}$$

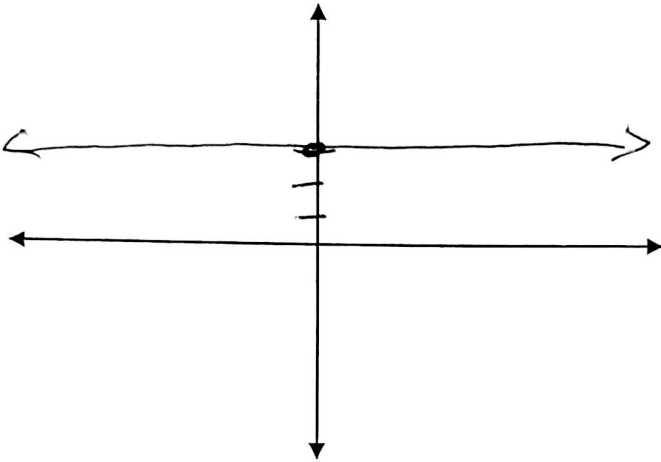
$$y = -3$$

$$3x - 4(0) - 12 = 0$$

$$\begin{aligned} \frac{3x}{3} &= \frac{12}{3} \\ x &= 4 \end{aligned}$$

x	y
0	-3
4	0

c) Sketch the graph $y = 3$. (3 marks)



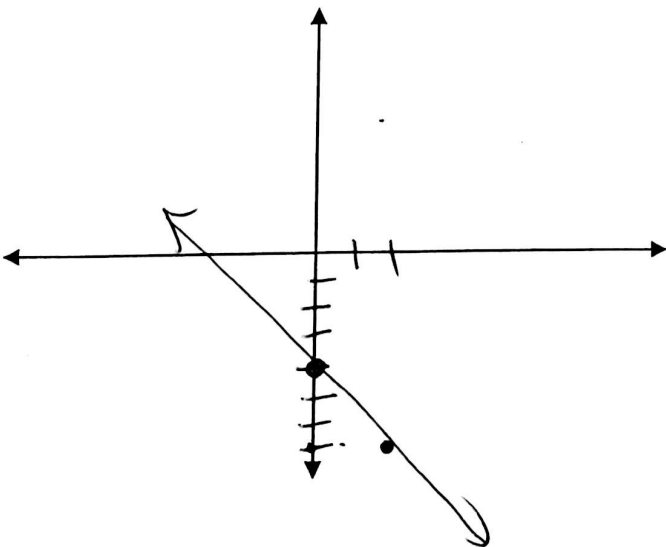
d) What is the slope of line? 0 \rightarrow no rise
lots run

e) What type of line would have the exact same slope as this line? any horizontal line
because they would
be parallel

f) Graph the following equation using slope intercept form. $2y + 8 = -3x$

- Solve for y _____
- State the Slope $-\frac{3}{2}$
- State the y intercept -4

$$\begin{aligned} 2y &= -3x - 8 \\ \frac{2y}{2} &= \frac{-3x - 8}{2} \\ y &= -\frac{3}{2}x - 4 \end{aligned}$$



Plot y-int
first and ~~then~~
then move $\frac{\text{rise}}{\text{run}}$

6. Does the point $(-3, -1)$ lie on the line $2x - 3y + 3 = 0$?
 (Show me if it does.) \rightarrow sub in.

$$2(-3) - 3(-1) + 3 = 0$$

$$-6 + 3 + 3 = 0$$

$$-6 + 6 = 0$$

$$0 = 0$$

yes

7. Write the equation of the line in slope intercept form for:

a) $m = 3, b = -3$

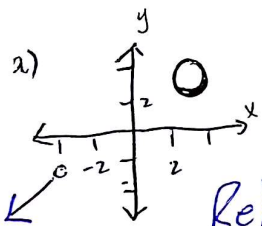
$$y = mx + b$$

$$y = 3x - 3$$

b) $m = \frac{1}{4}, b = 6$

$$y = \frac{1}{4}x + 6$$

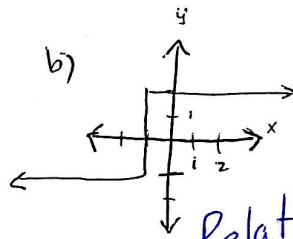
8. Which are relations? functions? State D: and R:



Relation Yes
 Function No

D: $(-\infty, -4) \cup [2, 4]$

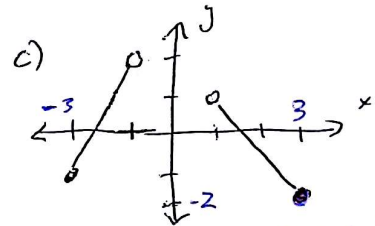
R: $(-\infty, -2) \cup [2, 4]$



Relation but
 not function

D: $(-\infty, \infty)$

R: $[-2, 2]$



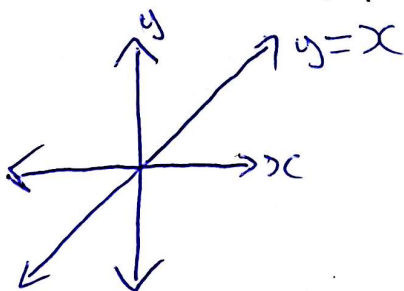
Function & Relation

D: $[-3, 1) \cup (1, 3]$

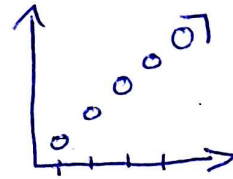
R: $[-2, 2]$

Give an example of:

a) a linear function (graph; equation)



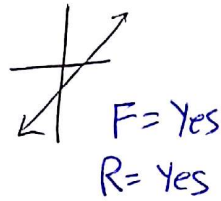
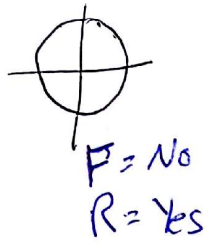
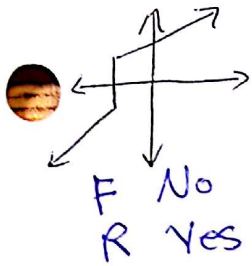
b) infinite discrete linear graph



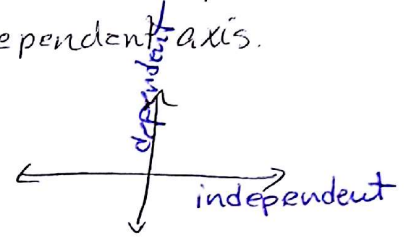
c) nonlinear continuous graph



10. Are the following functions? relations?



11. Label the dependent and independent axis.



12. Given the following, find m , $\parallel m$ and $\perp m$.

a) $3y + 4x + 6 = 0$
 $3y = -4x - 6$
 $\frac{3y}{3} = \frac{-4x - 6}{3}$
 $y = -\frac{4}{3}x - 2$
 $m = -4/3$
 $\parallel m = -4/3$
 $\perp m = \frac{3}{4}$

b) $7x = 11 - 3y$
 $-3y = 7x - 11$
 $\frac{-3y}{-3} = \frac{7x - 11}{-3}$
 $y = \frac{7}{-3}x + 11/3$
 $m = -7/3$
 $\parallel m = -7/3$
 $\perp m = \frac{3}{7}$

13 a) Find k if these slopes are parallel.

$m = \frac{k}{7}$ and $m = \frac{-3}{4}$

$\frac{k}{7} = \frac{-3}{4}$ cross mult.

$\frac{4k}{4} = \frac{-21}{4}$ $k = -\frac{21}{4}$

b) Find k if these slopes are \perp

$m = \frac{-2}{k+1}$ and $m = \frac{6}{11}$

$\frac{-2}{k+1} = \frac{6}{11}$
 $6(k+1) = -22$
 $6k + 6 = -22$
 $6k = -28$
 $k = -\frac{28}{6}$
 $k = -14/3$

14. Given the endpoint is $(6, -10)$ and the midpoint is $(-7, 13)$, find the other endpoint.

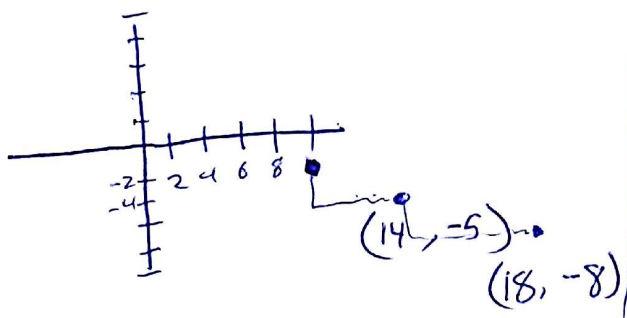
$2MP = EP$ or use $M_p = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

For x
 $2(-7) = 6 + x$
 $-14 = 6 + x$
 $-20 = x$

for y
 $2(13) = -10 + y$
 $26 = -10 + y$
 $36 = y$

$(-20, 36)$

15. Given $m = -\frac{3}{4}$ and the point $(10, -2)$, find 2 more points on the line.



run 4 \nearrow $(10, -2)$ \nearrow rise $-\frac{3}{4}$
 drop 3 \downarrow 1 get
 $(14, -5)$
 $(18, -8)$