M118
FALL 09

QUIZ 6

NAME: _____

1) (20 PTS.) A line passes thru the points $(2,3)$ and $(-1,12)$. Find the y-intercept of this line (i.e. find c such that the line passes thru $(0,c)$).

① $y = mx + b$

② $m = \frac{12-3}{-1-2} = \frac{9}{-3} = -3$

③ $y = -3x + b$

④ $12 = -3(-1) + b$ ((-1,12) is on the line)

$\Rightarrow b = 9 \Rightarrow$

$y = -3x + 9$

⑤ $y = -3 \cdot 0 + 9 \Rightarrow y = 9$

Answer: Value of y-intercept: 9

2) (20 PTS.) A line has slope 2 and passes through the point $(3,2)$. Find the coordinates of the intersection of this line with the line $x = 10$. OR $x = 12$

① $y = 2x + b$

② $2 = 2 \cdot 3 + b$ ((3,2) is on the line)

$\Rightarrow b = -4 \Rightarrow$

$y = 2x - 4$

③ $y = 2 \cdot 10 - 4 = 16$

③ $y = 2 \cdot 12 - 4 = 20$

Answer: (10, 16)

SEE OTHER SIDE

(12, 20)

3) (20 PTS.) Find the point of intesection of the two lines given by $x + 2y = 10$ and $3x + 4y = 12$.

Version I

$$\begin{aligned} x + 2y &= 10 \\ 3x + 4y &= 12 \end{aligned} \xrightarrow{\times 2} \begin{aligned} 2x + 4y &= 20 \\ 3x + 4y &= 12 \\ \hline -x \quad &= 8 \end{aligned}$$

$x = -8$

$x + 2y = 10$ (@ $x = 8$) $\Rightarrow -8 + 2y = 10 \Rightarrow 2y = 18 \Rightarrow y = 9$

CHECK: $3(-8) + 4 \cdot 9 = -24 + 36 = \underline{\underline{12}}$

$x + 2y = 8 \qquad 3x + 4y = 12$

Version II

$$\begin{aligned} x + 2y &= 8 \\ 3x + 4y &= 12 \end{aligned} \xrightarrow{\times 2} \begin{aligned} 2x + 4y &= 16 \\ 3x + 4y &= 12 \\ \hline -x \quad &= 4 \end{aligned}$$

$x = -4$

$x + 2y = 8$ (@ $x = -4$) $\Rightarrow -4 + 2y = 8 \Rightarrow 2y = 12 \Rightarrow y = 6$

CHECK: $3(-4) + 4(6) = -12 + 24 = \underline{\underline{12}}$

Answer: $(-8, 9)$

$(-4, 6)$