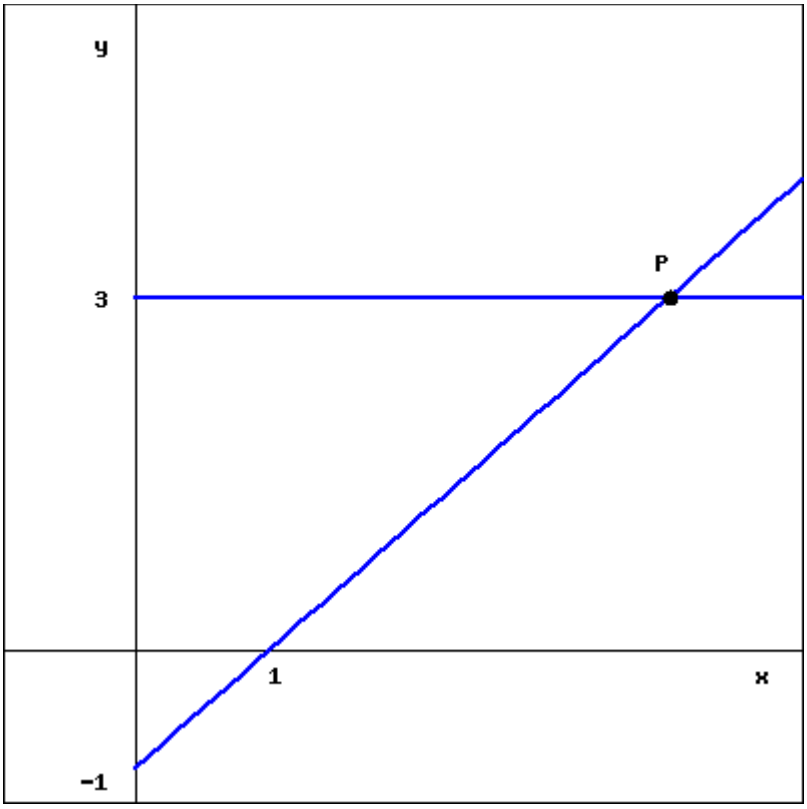
Quiz 1 Math 114 October 7

1. (2 points) Find the slope and the equation for the line passing through the points $(2,3)$ and $(3.\frac{9}{2})$.

2. (1 point) Change the equation $y - 10 = 2(x - 3)$ from point-slope from to slope-intercept form.

3. (3 points) Find the coordinates of the point P.



4. (3 points) Solve the following system of equations.

$$\begin{array}{rcl} 2x + 3y & = & 3 \\ x - y & = & 1 \end{array}$$

5. (3 points) A linear system of equations may have a unique solution, no solution, or infinitely many solutions. Indicate the type of the system for the following examples by U, N, or I, respectively.

(a) $\begin{array}{l} 2x + 3y = 0 \\ 2x + 4y = 0 \end{array}$ (b) $\begin{array}{l} 7x + 3y = \pi \\ 4x - 6y = \pi^2 \end{array}$ (c) $\begin{array}{l} 2x + 3y = 0 \\ 4x + 6y = 0 \end{array}$ (d) $\begin{array}{l} x - y = 15 \\ y - x = 15 \end{array}$

(e) $\begin{array}{l} x + y = 5 \\ x + 2y = 10 \end{array}$

6. (3 points) Find the point of intersection of the lines $y = x + 2$ and $2x + 3y = 14$.
7. (4 points) Use the elimination method to find the solution of the system

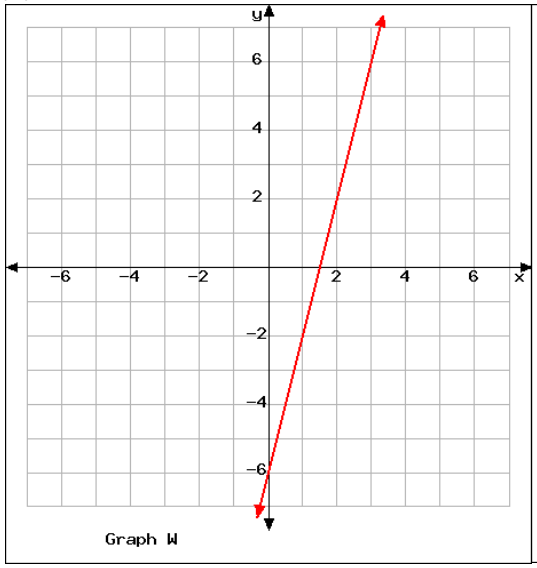
$$5x + 2y = -2$$
$$7x + 3y = -2$$

8. (2 points) Consider the system of equations

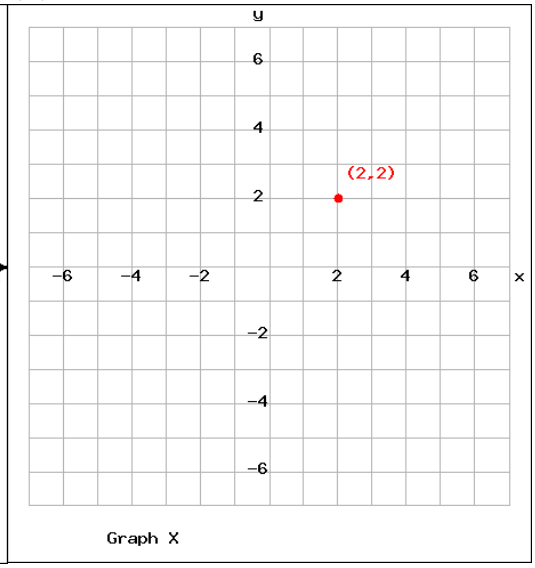
$$2y + 12 = 8x$$
$$12x - 3y = 18$$

Which of the following graphs shows the solution set of the above system?

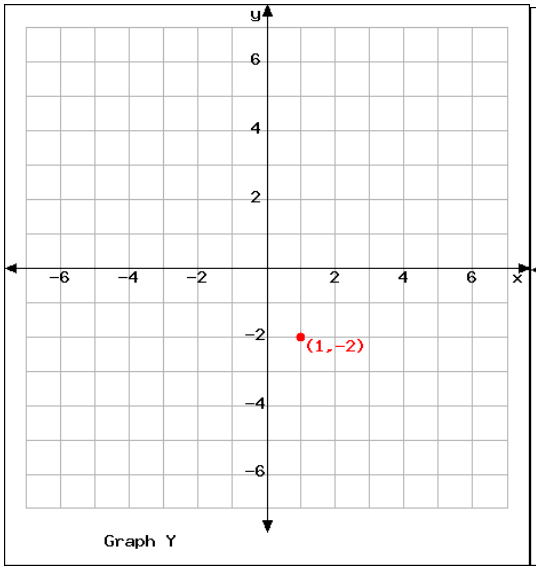
(a)



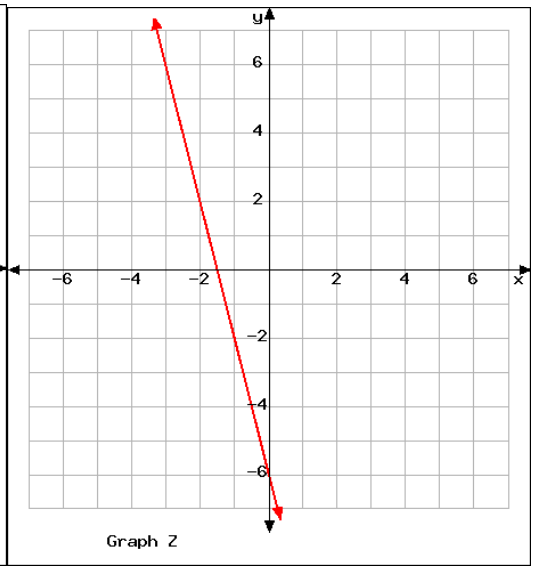
(b)



(c)



(d)



9. (4 point) Determine the values of h and k for which the system

$$5x + y = h$$
$$4x + ky = 1$$

10. (4 point) Let $\vec{a} = (-5,1,-4)$ and $\vec{b} = (-2,0,3)$. Show that there are scalars s and t so that

$$s\vec{a} + t\vec{b} = (1,-1,10)$$

11. (3 point) Suppose $\vec{u} = (2,-3,4)$ and $\vec{v} = (-4,4,1)$. Perform the following operations:

(a) $\vec{u} + \vec{v}$ (b) $\vec{u} - \vec{v}$ (c) $\vec{v} - \vec{u}$

(d) $8\vec{u}$ (e) $-\frac{1}{2}\vec{v}$ (f) $2\vec{u} - 8\vec{v}$

12. (2 point) Are $\overrightarrow{AB}$ and $\overrightarrow{PQ}$ parallel? If so, do they point in the same direction?
$A(-5,0)$, $B(-6,1)$, $P(2,4)$, $Q(-1,7)$

13. (2 points) Consider the point $B(2,6)$ and the vector $\overrightarrow{AB} = (-4,14)$. Find the coordinates of the point A.

14. (1 point) Find the components of vector $\overrightarrow{AB}$ where $A(-7,4,-3)$ and $B(9,-3,-8)$.

15. (1 point) Find the components of vector $\overrightarrow{AB}$ in the given figure below.