Alg 2A Ch 3 Practice Test

Per: _____ Date: _____ Score: _____ /100

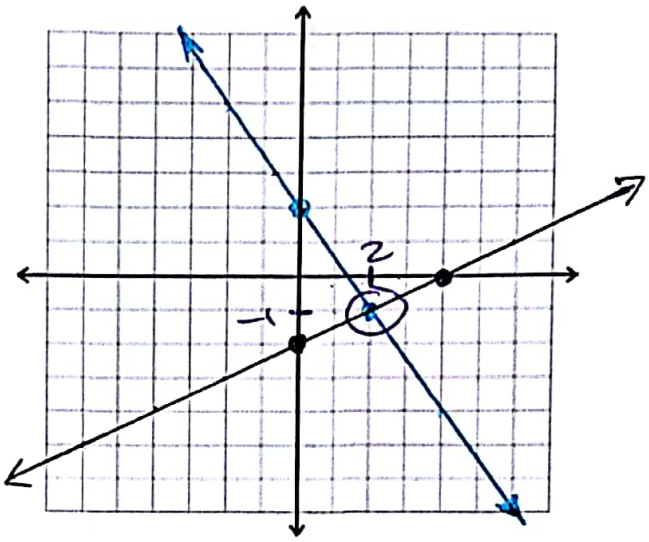
Show work for full credit. Circle, box, or highlight your answers.

Each question's point value appears in < >.

Solve the system by the graphing method <6>

1. $x - 2y = 4$
   $y = -\frac{3}{2}x + 2$

(2, −1)



Solve the system by the substitution method <6>

2. $2x - y = -4$ ⇒ $y = 2x + 4$
   $3x + y = 9$

$3x + (2x+4) = 9$
$3x + 2x + 4 = 9$
$5x + 4 = 9$
$5x = 5$
$x = 1$

$y = 2(1) + 4$
$y = 2 + 4$
$y = 6$

(1, 6)

Solve the system by the elimination method <6>

3. $2x + 3y = 5$
   $(-2)(x + y) = (4)(-2)$ → $-2x - 2y = -8$

$y = -3$

$2x + 3y = 5$
$2x + 3(-3) = 5$
$2x - 9 = 5$
$2x = 14$
$x = 7$

(7, −3)

-more-

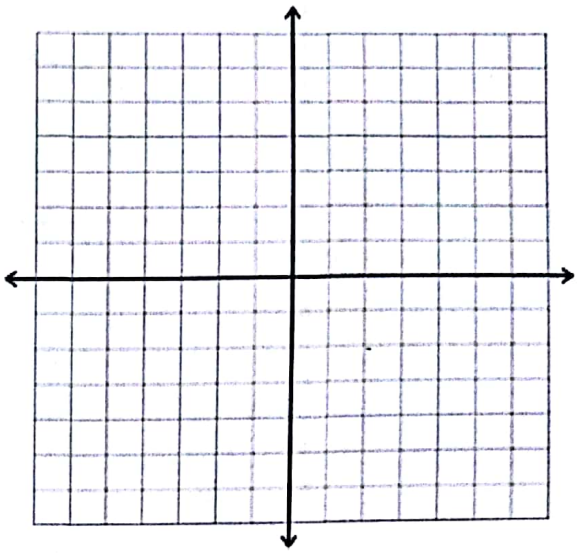
Solve the system by any method taught in class (graphing, substitution, elimination, or Cramer's Rule) <6>

4. $2x + y = 5$
$x - y = -2$

method varies

solution is

(1, 3)

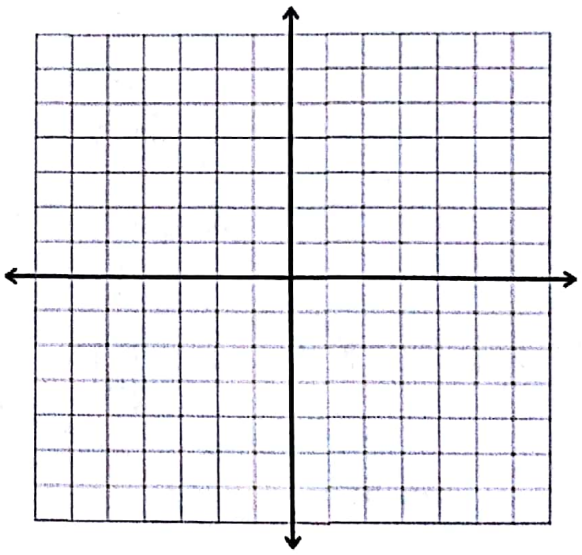


5. $-3x + y = 2$
$x + y = 6$

method varies

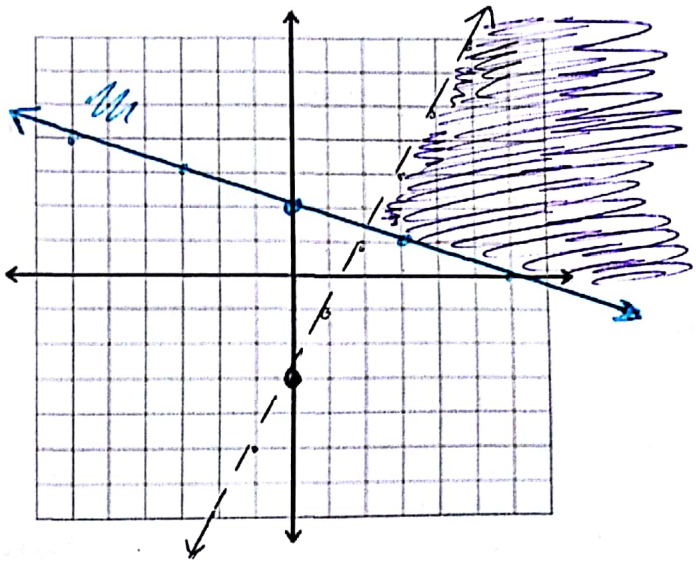
solution is

(1, 5)



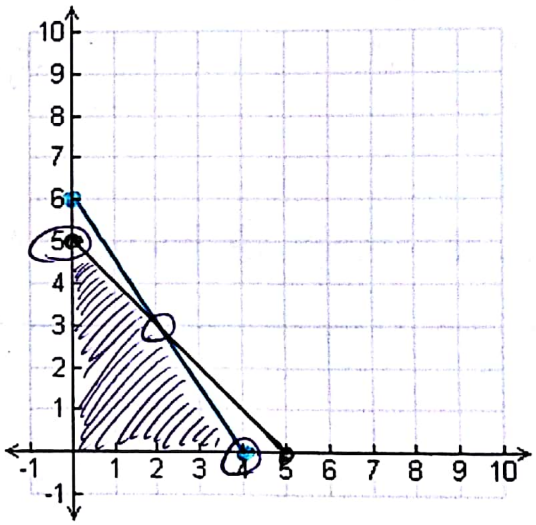
Graph the system of inequalities. <7>

6. $y < 2x - 3$
$y \geq -\frac{1}{3}x + 2$



Graph the system of constraints. Identify all vertices. Then find the values of ***x*** and ***y*** that maximize the objective function. <7>

7. $x + y \leq 5$
$3x + 2y \leq 12$
$x \geq 0,\ y \geq 0$



maximize for N = 6x + 5y

	N = 6x+5y	
(4,0)	24	6(4)+5(0)
(2,3)	27	6(2)+5(3)
(0,5)	25	6(0)+5(5)

vertices: N = ...

(4 , 0) 24

(2 , 3) 27

(0 , 5) 25

-work area-

answer: The point (2, 3) maximizes equation for N.

-more-

Write a system of equations and solve using any method taught in class. Write your answer in a complete sentence. <7>

8. In an enclosure at SeaWorld there are otters and seagulls. Among them are 11 heads and 32 feet. How many of each animal are there in the enclosure?

system of equations:

Let T = # of otters

G = # of gulls

	otters	Gulls	total
heads	1T	1G	11
feet	4T	2G	32

-work area-

$T+G=11$

$4T+2G=32$

(solve by a method taught in class)

solution:

$T=5 \quad G=6$

answer: There are 5 otters and 6 gulls in the enclosure

BONUS: Use Cramer's Rule to solve the system: <4>

$3x-2y=5$

$-x+3y=4$

$$\left[\begin{array}{cc|c} 3 & -2 & 5 \\ -1 & 3 & 4 \end{array}\right]$$

$D: \begin{vmatrix} 3 & -2 \\ -1 & 3 \end{vmatrix} \Rightarrow 9-2=7$

$D_x: \begin{vmatrix} 5 & -2 \\ 4 & 3 \end{vmatrix} \Rightarrow 15-{-8}=23$

$D_y: \begin{vmatrix} 3 & 5 \\ -1 & 4 \end{vmatrix} \Rightarrow 12-{-5}=17$

$x=\frac{D_x}{D}=\frac{23}{7} \quad y=\frac{D_y}{D}=\frac{17}{7}$

$\left(\frac{23}{7}, \frac{17}{7}\right)$

-end-