

Name: Key

Algebra 2: Midterm Rev Part 1 Multiple Choice (2pts. Each)

1. Evaluate  $-4rs + (-rs) - 2r^2$  when  $r = -2$  and  $s = 5$ .

- a. 58      b. 28      **c. 42**      d. -15

$$-4(-2)(5) + (-(-2)(5)) - 2(-2)^2$$

$$40 + 10 - 8$$

2. Solve the equation:  $6(5 - x) = 4 + (-2 + x)$ .

- a.  $x = 5$       **b.  $x = 4$**       c.  $x = \text{undefinable}$       d.  $x = -2$

$$30 - 6x = 4 - 2 + x$$

$$28 = 7x$$

3. Solve the equation:  $-\frac{1}{3}x + 3 = 2(2x - 3)$ .

- a. c.  $\frac{18}{13}$       b. c.  $\frac{13}{27}$       **c.  $\frac{27}{13}$**       d. -2

$$-\frac{1}{3}x + 3 = 4x - 6$$

$$\frac{2}{3} \cdot 9 = \frac{13}{3}x$$

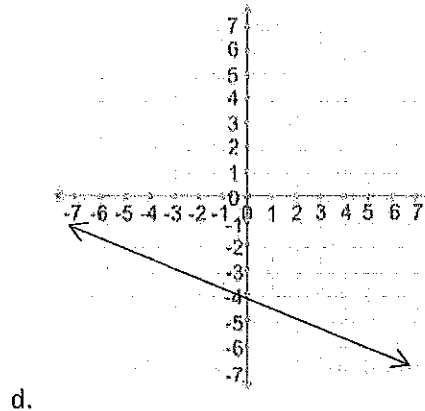
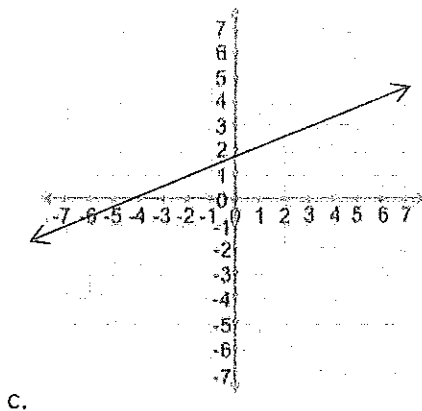
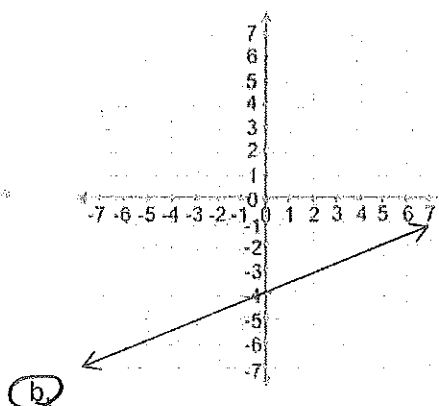
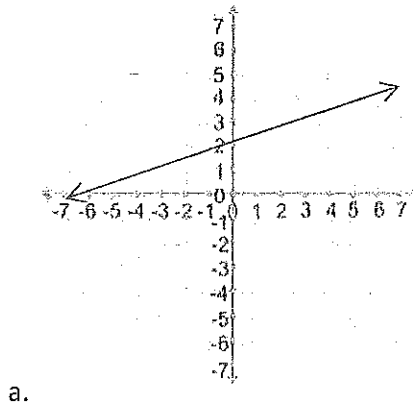
4. Find the slope of the line passing through the points  $(1, -5)$  and  $(2, 5)$ .

- a.  $m = \frac{1}{10}$       b.  $m = -10$       c.  $m = 0$       **d.  $m = 10$**

$$\frac{5 - (-5)}{2 - 1} = \frac{10}{1} = 10$$

5. Graph the line  $-2x + 5y = -20$ .

$$x = 10 \quad y = -4$$



6. Write the equation of the line that passes through the point (1,5) and is

perpendicular to  $y = -\frac{1}{4}x - 6$ .

$m = 4$       $y - 5 = 4(x - 1)$   
 $y = 4x + 1$

- a.  $y = -4x + 1$      **(b)**  $y = 4x + 1$      c.  $y = \frac{1}{4}x + \frac{19}{4}$      d.  $y = 4x - 1$

7. Write the equation of the line that has a slope of -5 and passes through the point (-1,-2).

- a.  $y = -5x + 5$      **(b)**  $y = -5x - 7$      c.  $y = -3x + 10$      d.  $y = -5x + 7$

$y + 2 = -5(x + 1)$   
 $y = -5x - 7$

8. What is the equation of the line that contains (7,5) and (-1,1)?

- a.  $y = \frac{1}{2}x + \frac{3}{2}$      b.  $y = -2x + 9$      c.  $y = -\frac{1}{2}x + \frac{3}{2}$      d.  $y = \frac{1}{2}x$

$\frac{5-1}{7+1} = \frac{4}{8} = \frac{1}{2}$   
 $y - 1 = \frac{1}{2}(x + 1)$

9. If  $f(x) = \begin{cases} 4x + 1, & \text{if } x < -1 \\ 2x - 3, & \text{if } x \geq -1 \end{cases}$  what is  $f(5)$ ?

$2(5) - 3$

- a. 21     **(b)** 7     c. 21 and 7     d. neither

10. Solve the linear system:  $\begin{cases} -2x - 6y = 4 \\ 4x + 3y = 1 \end{cases}$

$-4x - 12y = 8$   
 $4x + 3y = 1$   


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 $-9y = 9$   
 $y = -1$

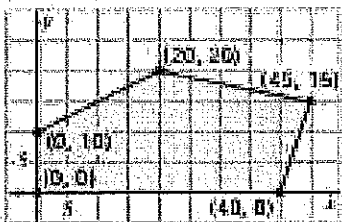
- a. (-1,1)     **(b)** (1,-1)     c. no solution     d. infinite solutions

11. Solve the linear system:  $\begin{cases} 3x + 3y = 0 \\ 2y = -2x \end{cases}$

$y = -x$       $3x + 3(-x) = 0$   
 $0 = 0$

- a. (0,0)     b. (3,-3)     c. no solution     **(d)** infinite solutions

12. Given the feasible region shown, which is the maximum value of the objective function  $C = 5x + 2y$ ?



$(0,0)$       $C = 5(0) + 2(0) = 0$   
 $(0,10)$       $C = 5(0) + 2(10) = 20$   
 $(20,20)$       $C = 5(20) + 2(20) = 140$   
 $(45,15)$       $C = 5(45) + 2(15) = 255$   
 $(40,0)$       $C = 5(40) + 2(0) = 200$

- a. 20     b. 200     c. 140     **(d)** 255

13. Solve the system of equations: 
$$\begin{cases} 3x + 2y + 4z = 11 \\ 2x - y + 3z = 4 \\ 5x - 3y + 5z = -1 \end{cases}$$

- A. (-3,2,4)      b. (4,2,-3)      c. no solution      d. infinite solutions

14. Perform the matrix operation 
$$\begin{bmatrix} 6 & 1 & -2 \\ 5 & 0 & 8 \\ 3 & -1 & 5 \end{bmatrix} + \begin{bmatrix} 5 & 0 & 9 \\ -2 & 4 & 10 \\ 4 & -2 & 3 \end{bmatrix}$$

- a.  $\begin{bmatrix} 11 & 1 & 7 \\ 7 & 4 & 18 \\ 7 & 3 & 2 \end{bmatrix}$       b.  $\begin{bmatrix} 11 & 1 & 7 \\ -3 & 4 & 4 \\ 7 & 3 & -2 \end{bmatrix}$        c.  $\begin{bmatrix} 11 & 1 & 7 \\ 3 & 4 & 18 \\ 7 & -3 & 8 \end{bmatrix}$       d.  $\begin{bmatrix} 11 & 0 & 7 \\ 3 & 0 & 18 \\ 7 & -3 & 8 \end{bmatrix}$

15. Find the determinant of the matrix  $\begin{bmatrix} -6 & 7 \\ -5 & 5 \end{bmatrix}$ . 
$$-6(5) - (-5)(7) = -30 + 35 = 5$$

- a. -3      b. -65       c. 5      d. 24

16. Solve for c:  $\begin{bmatrix} 7 & a+1 \\ 10b & c-2 \end{bmatrix} = \begin{bmatrix} 7 & -2 \\ 20 & -6 \end{bmatrix}$

- a. -3      b. 2       c. -4      d.  $\frac{1}{3}$

17. Find the vertex of the parabola  $y = 4x^2 + 8x + 7$ . Does the parabola open up or down?

$$\frac{-8}{2(4)} = \frac{-8}{8} = -1$$

- a. (1,-3), up      b. (0,-7), down       c. (-1, 3), up      d. (-7,0), up

18. Factor the expression  $20x^2 - 44x - 15$ .

- a.  $(2x+5)(10x-3)$       b.  $(4x+5)(5x-3)$       c.  $(4x-5)(5x+3)$        d.  $(10x+3)(2x-5)$

19. Solve the equation  $x^2 + 5x - 24 = 0$ .

- a.  $x=6, x=-4$       b.  $x=-6, x=4$        c.  $x=3, x=-8$       d.  $x=8, x=-3$

20. Multiply  $(-5 - 2i)(3 + 7i)$ . 
$$-15 - 35i - 6i - 14i^2 = -1 - 41i$$

- a.  $-15 - 4i^2$       b.  $-29 - 41i$       c.  $-1 + 41i$        d.  $-1 - 41i$