

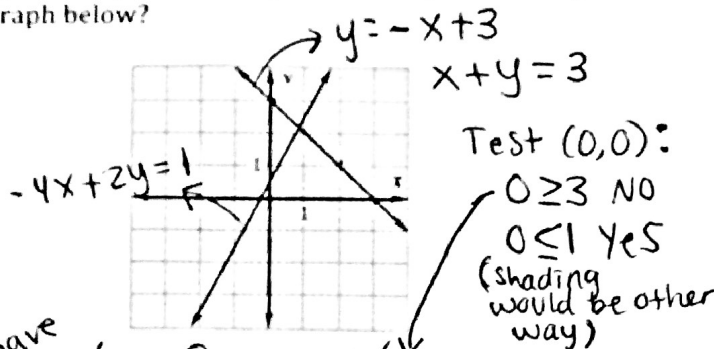
Answers: 1) D 2) D 3) C 4) B 5) C  
12) B 13) A 14) B 15) D 16) D

6) C 7) A 8) D 9) A 10) D 11) D  
17) C 18) A 19) B 20) C 21) D 22) C

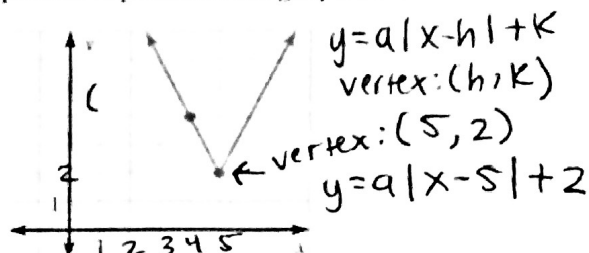
First Quarter Midterm Review (Chapters 1-4.4)  
Advanced Algebra with Trig, Glawe

Name: Key  
Date: \_\_\_\_\_ P: \_\_\_\_\_

1) Which system of inequalities is represented by the graph below?



6) Which equation represents the graph below?



~~A)  $y = |x-5|+2$~~  ~~B)  $y = |x+5|+2$~~

☒ C)  $y = 2|x-5|+2$  ~~D)  $y = 2|x+5|+2$~~

7) Solve the equation  $y = 12x^2 - 17x - 5$ .

☒ A)  $x = -1/4, 5/3$

B)  $x = 1/4, 5/3$

C)  $x = -1/4, -5/3$

D)  $x = 1/4, -5/3$

8) What is the solution of the linear system?

$$\begin{array}{r} 6x - 2y = 5 \\ -3x + y = 7 \end{array} \quad \begin{array}{r} 6x - 2y = 5 \\ -6x + 2y = 14 \end{array}$$
  
0 = 19 not true

A) (1, 1)

B) (0, 0)

C) Infinitely many

☒ D) No solution

9) In one week, a music store sold 9 guitars for a total of \$3611. Electric guitars sold for \$479 each and acoustic guitars sold for \$339 each. How many of each type of guitar sold?

$$\begin{array}{l} \text{A) 5 acoustic, 4 electric} \\ \text{B) 4 acoustic, 5 electric} \\ \text{C) 3 acoustic, 6 electric} \\ \text{D) 6 acoustic, 3 electric} \end{array}$$

10) Solve the equation  $|2x + 5| = 3x$ .

A)  $x = 5, 1$

B)  $x = 5, -1$

C)  $x = -5$

☒ D)  $x = 5$

11) Factor the expression  $2c^2 - 2c - 12$  completely.

$$\begin{array}{l} \text{A) } (c-2)(c+3) \\ \text{B) } 2(c-2)(c+3) \\ \text{C) } 2(c+2)(c-3) \\ \text{D) } (c+2)(c-3) \\ \text{E) } (c+2)(2c-6) \end{array}$$

$2(c-3)(c+2)$

CHECK for extraneous solutions:  
 $x = 5: |2(5) + 5| = 3(5) \rightarrow |15| = 15$   
 $x = -1: |2(-1) + 5| = 3(-1) \rightarrow |3| = -3$   
Extraneous:  $-1$

2) Find the slope of the line passing through the points (-3, 6) and (-7, 3).  $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 6}{-7 - (-3)} = \frac{-3}{-4} = \frac{3}{4}$

A) 4/3

B) -6/13

C) -13/6

☒ D) 3/4

3) What is the solution of the linear system?

$$\begin{array}{r} 3x + y = -1 \rightarrow y = -3x - 1 \\ 4x + 2y = 2 \end{array} \quad \begin{array}{r} -2x = 4 \\ x = -2 \end{array}$$

A) (-1, 1)

B) (1, -1)

☒ C) (-2, 5)

D) (2, -5)

E) (5, -2)

(-2, 5)

4) You drive 45 miles per hour. What is your speed in feet per second?

A) 3960 feet per second

☒ B) 66 feet per second

C) 30.68 feet per second

D) 1.95 feet per second

5) How is the inequality  $x < -2$  or  $x > 5$  written in interval notation?

~~A)  $(-\infty, 5) \cup (-2, \infty)$~~

~~B)  $(-2, 5)$  (and)~~

☒ C)  $(-\infty, -2) \cup (5, \infty)$

~~D)  $(-\infty, -2] \cup [5, \infty)$~~

not equal to

has to be lowest to greatest

66 feet per sec

10) Solve the equation  $|2x + 5| = 3x$ .

A)  $x = 5, 1$

B)  $x = 5, -1$

C)  $x = -5$

☒ D)  $x = 5$

11) Factor the expression  $2c^2 - 2c - 12$  completely.

$$\begin{array}{l} \text{A) } (c-2)(c+3) \\ \text{B) } 2(c-2)(c+3) \\ \text{C) } 2(c+2)(c-3) \\ \text{D) } (c+2)(c-3) \\ \text{E) } (c+2)(2c-6) \end{array}$$

$2(c-3)(c+2)$

CHECK for extraneous solutions:  
 $x = 5: |2(5) + 5| = 3(5) \rightarrow |15| = 15$   
 $x = -1: |2(-1) + 5| = 3(-1) \rightarrow |3| = -3$   
Extraneous:  $-1$

- 12) Solve the inequality  $|3a + 4| > 2$ .  
 $\rightarrow$  greater OR than  
 $3a + 4 > 2$  or  $3a + 4 < -2$   
 $-4 -4$   
 $3a > -2$  or  $3a < -6$   
 $\frac{3a}{3} > \frac{-2}{3}$  or  $\frac{3a}{3} < \frac{-6}{3}$   
 $a > -2/3$  or  $a < -2$
- A)  $a > 2/3$  or  $a < -2$   
 B)  $a > -2/3$  or  $a < -2$   
 C)  $-2 < a < -2/3$   
 D)  $-2 < a < 2/3$

For 17-19, match the graphs below to each equation.

- 17)  $y = 0.5x^2 - 2x$  Graph C  
 18)  $y = 0.5x^2 + 3$  Graph A  
 19)  $y = 0.5x^2 - 2x + 3$  Graph B

13) What is the maximum value of the function

$g(x) = -3x^2 + 18x - 5$ ?  $x = \frac{-b}{2a} = \frac{-18}{2(-3)} = \frac{-18}{-6} = 3$

- A) 22 B) -32  $g(3) = -3(3)^2 + 18(3) - 5$   
 $= -3(9) + 54 - 5$   
 $= -27 + 49$   
 $= 22$   
 C) -86 D) 76

14) What is the vertex of the equation

$y = 2(x - 3)(x + 5)$ ?  $x = \frac{p+q}{2} = \frac{3+(-5)}{2} = \frac{-2}{2} = -1$

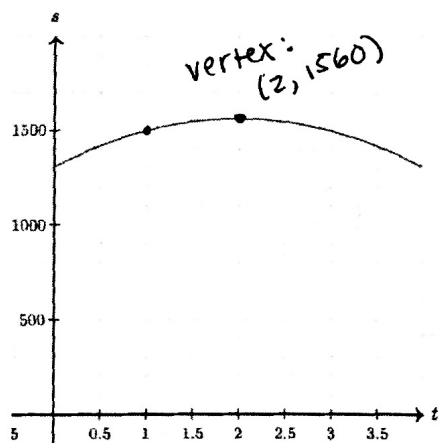
- A) (-1, -16) B) (-1, -32)  $y = 2(-1-3)(-1+5)$   
 $= 2(-4)(4)$   
 $= -32$  (-1, -32)  
 C) (1, -24) D) (1, -12)

15) Write the equation  $y = 2/3x + 4$  into standard form.

$AX + BY = C$  A is not negative  
 A, B, C not fractions

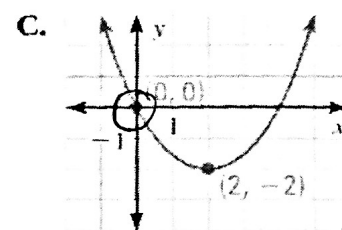
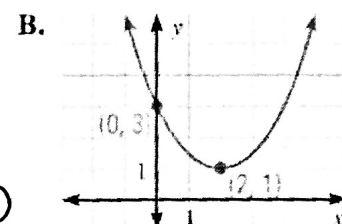
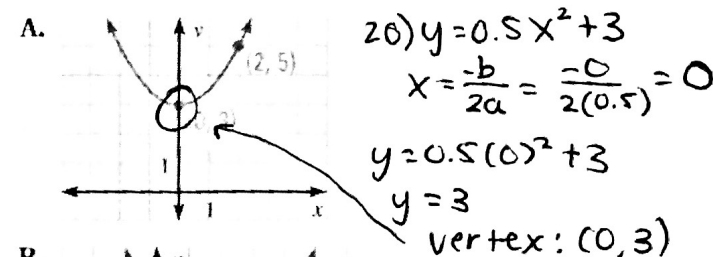
- A)  $-2/3x + y = 4$   
 B)  $2/3x - y = -4$   
 C)  $2x + 3y = 12$   
 D)  $2x - 3y = -12$   
 E)  $-2x + 3y = 12$   
 $y = 2/3x + 4$   
 $-2/3x - 2/3x$   
 $-3(-2/3x + y = 4)$   
 $2x - 3y = -12$

16) The number of secure Internet servers in the United States from 2009 to 2013 can be modeled by a quadratic function. The graph approximates the number of secure Internet servers,  $s$ , per 1 million people, for the given year, where  $t$  represents the years since 2009. Which of the following functions best models the number of secure Internet servers in the United States per 1 million people between 2009 and 2013?



17) Find the equation of a line that has a slope of 2 and goes through the point (-1, 2).

- A)  $s = -7(t + 2)^2 - 1560$   
 B)  $s = -7(t + 2)^2 + 1560$   
 C)  $s = -64(t + 2)^2 - 1560$   
 D)  $s = -64(t - 2)^2 + 1560$   
 $y = a(x-h)^2 + k$  vertex: (h, k)  
 $s = a(t-2)^2 + 1560$   
 Since  $t$  represents years since 2009, we have the ordered pair (1, 1500)  
 $1500 = a(1-2)^2 + 1560$   
 $1500 = a(-1)^2 + 1560$   
 $a = -60$  (approximation)



20) Solve the equation  $5p^2 = -4 - 12p$ .

- A) prime B)  $p = -5/2, -2$   
 C)  $p = -2/5, -2$  D)  $p = 2/5, 2$   
 $5p^2 + 12p + 4 = 0$   
 $(5p+4)(p+1) = 0$   
 $5p+4=0 \rightarrow p=-4/5$   
 $p+1=0 \rightarrow p=-1$

21) What is the solution of the linear system?

- A) (-1, 1) B) (2, 2)  
 C) (-2, 5) D) (2, -2)  
 $(2x + 3y = -2) \cdot 2 \rightarrow 4x + 6y = -4$   
 $4x + 7y = -6$   
 $-y = 2 \rightarrow y = -2$   
 $2x + 3(-2) = -2$   
 $2x - 6 = -2$   
 $2x = 4$   
 $x = 2$

22) Find the equation of a line that has a slope of 2 and goes through the point (-1, 2).

- A)  $y = 2x + 2$  B)  $y = 2x - 1$   
 C)  $y = 2x + 4$  D)  $y = -1/2x + 2$   
 $y = 2x + b$   
 $2 = 2(-1) + b$   
 $2 = -2 + b$   
 $4 = b$   
 $y = 2x + 4$