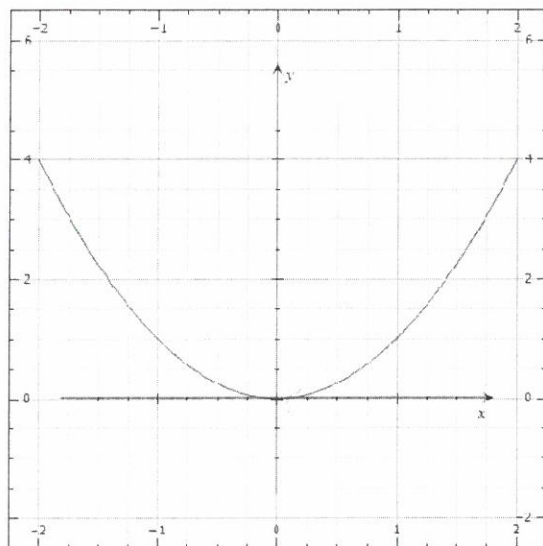


Please **show all work** on a separate piece of loose leaf to receive full or partial credit. Please write final answers on answer line. Please read directions carefully.

**Relations, Functions, Function Notation, Linear Equations and Functions**

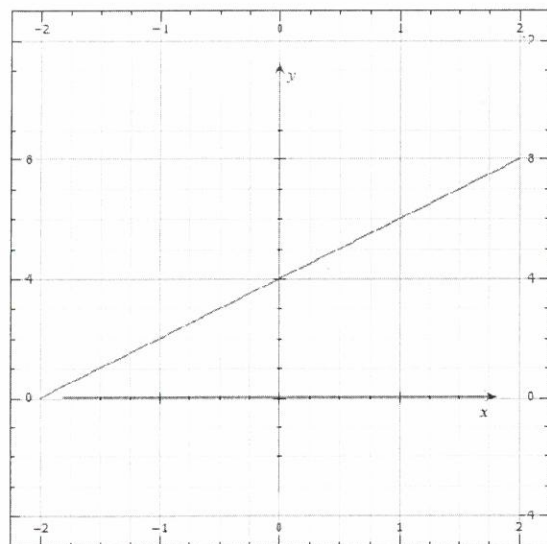
**Questions 1 and 2: Determine whether each relation is a function. State its domain and range**

1)



- 1) Function? Yes or No? Yes  
 1) Domain:  $\mathbb{R}$  or  $(-\infty, \infty)$   
 1) Range:  $y \geq 0$  or  $[0, \infty)$

2)



- 2) Function? Yes or No? Yes  
 2) Domain:  $\mathbb{R}$  or  $(-\infty, \infty)$   
 2) Range:  $\mathbb{R}$  or  $(-\infty, \infty)$

Ken

**Questions 3-5: Find each value if  $f(x) = 10x + 3x^2$  and  $g(x) = 5x^2 - 8x$  and  $h(x) = \frac{1}{x}$ .**

3)  $f(-6)$

3)  $f(-6) = 48$

4)  $g(a^2)$

4)  $g(a^2) = 5a^4 - 8a^2$

5)  $h(0)$

5) undefined

6) Write the equation  $\frac{2}{5}x - 8 = 7y$  in standard form, and identify  $A$ ,  $B$ , and  $C$ . (Hint: Standard Form is  $Ax + By = C$ , where  $A$ ,  $B$ , and  $C$  are integers, and  $A \geq 0$ .)

6)  $2x - 35y = 40$   
 $A = 2$   $B = -35$   $C = 40$

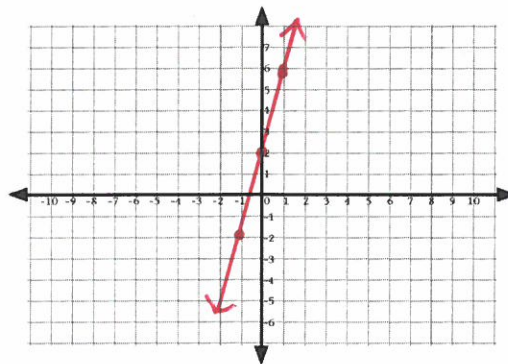
7) Find the  $x$ -intercept and the  $y$ -intercept of the graph of  $2y = 3x - 6$

7)  $x\text{-int.} = 2$   
 $y\text{-int.} = -3$

**For Questions 8-9, graph each equation.**

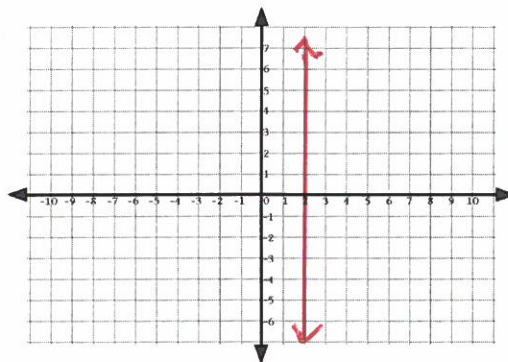
8)  $y - 4x = 2$

8)



9)  $x = 2$

9)



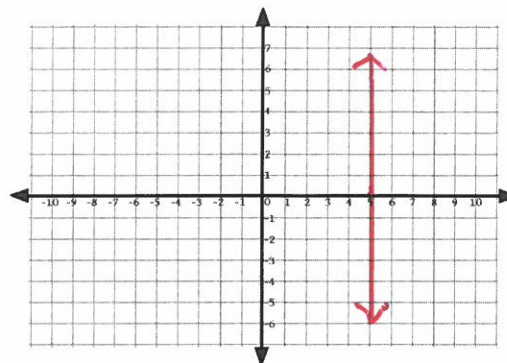
Key

- 10) Find the slope of a line that passes through  $(9, -7)$  and  $(-1, -2)$ .

10)  $m = -\frac{1}{2}$

- 11) Graph the line passing through  $(5, 6)$  perpendicular to the graph of  $y = -3$ .

11)



- 12) Write the equation in slope-intercept form for the line that has a slope of 3 and passes through the point  $(1, -5)$ .

12)  $y = 3x - 8$

- 13) Write an equation in slope-intercept form for the line that passes through  $(-2, 3)$  and is parallel to the line whose equation is  $2x + 3y = 6$ .

13)  $y = -\frac{2}{3}x + \frac{5}{3}$

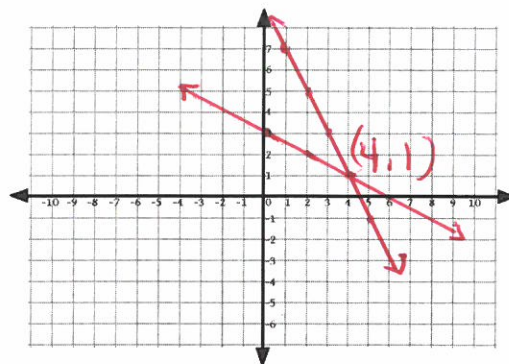
Please **show all work** on a separate piece of loose leaf to receive full or partial credit. Please write final answers on answer line. Please read directions carefully.

### Systems of Equations and Inequalities

**For Questions 1-2, solve each system of equations by graphing.**

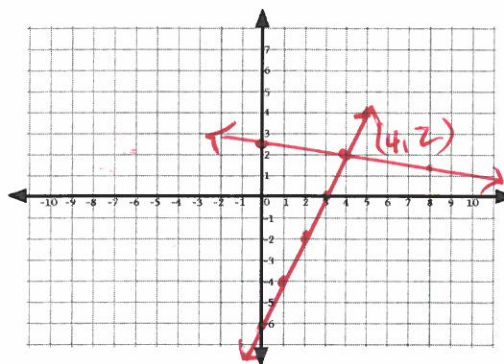
1) 
$$\begin{aligned} x + 2y &= 6 \\ 2x + y &= 9 \end{aligned}$$

1) Solution is: (4, 1)



2) 
$$\begin{aligned} \frac{1}{4}x + 2y &= 5 \\ 2x - y &= 6 \end{aligned}$$

2) Solution is: (4, 2)



**For Questions 3 and 4, solve each system by substitution.**

3) 
$$\begin{aligned} y &= 3x - 4 \\ y &= 4 + x \end{aligned}$$

3) (4, 8)

4) 
$$\begin{aligned} 4c + 2d &= 10 \\ c + 3d &= 10 \end{aligned}$$

4) (1, 3)

Key

For Questions 5 and 6, solve each system by elimination.

5) 
$$\begin{aligned} x - y &= -9 \\ 7x + 2y &= 9 \end{aligned}$$

5) 
$$(-1, 8)$$

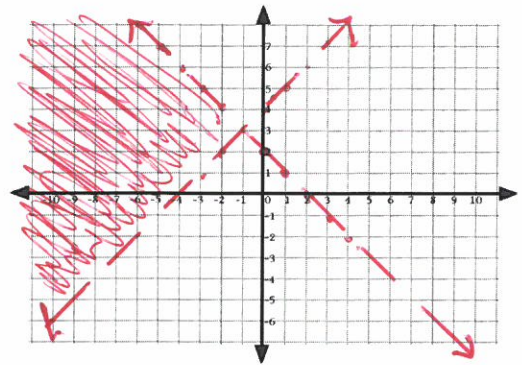
6) 
$$\begin{aligned} 4x - 5y &= 17 \\ 3x + 4y &= 5 \end{aligned}$$

6) 
$$(3, -1)$$

For Questions 7-8, solve each system of inequalities by graphing.

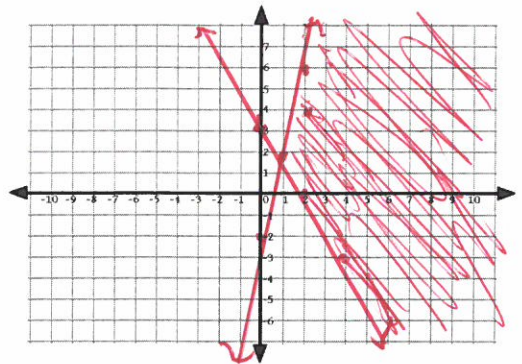
7) 
$$\begin{aligned} y &< 2 - x \\ y &> x + 4 \end{aligned}$$

7)



8) 
$$\begin{aligned} 3x + 2y &\geq 6 \\ 4x - y &\geq 2 \end{aligned}$$

8)





Name Key Algebra II Honors Summer Packet

Please **show all work** on a separate piece of loose leaf to receive full or partial credit. Please write final answers on answer line. Please read directions carefully.

**Rules of Exponents, Operations on Polynomials, and Factoring Polynomials**

**For Questions 1-5, simplify completely.**

1)  $(2x)(5x)$

1)  $10x^2$

2)  $(3x)^2$

2)  $9x^2$

3)  $\left(\frac{x^2}{y^3}\right)^2$

3)  $\frac{x^4}{y^6}$

4)  $\left(\frac{x^2}{y^3}\right)^{-2}$

4)  $\frac{y^6}{x^4}$

5)  $\left(\frac{3a^{-5}x^2}{b^{-6}y^3}\right)^0$

5) 1

**For Questions 6-9, perform the indicated operation.**

6)  $(2x^3 + 3x^2) + (7x^3 - 2x^2)$

6)  $9x^3 + x^2$

7)  $(2x^3 + 3x^2) - (7x^3 - 2x^2)$

7)  $-5x^3 + 5x^2$

8)  $(2x^3 + 3x^2)(7x^3 - 2x^2)$

8)  $14x^6 + 17x^5 - 6x^4$

9)  $(2x + y)^2$

9)  $4x^2 + 4xy + y^2$

Key

For Questions 10-19, factor each polynomial completely.

10)  $7x^2 - 14x$

10)  $7x(x-2)$

11)  $21x^3 - 18x^2y^2 + 24xy^2$

11)  $3x(7x^2 - 6xy^2 + 8y^2)$

12)  $c^2 - 100$

12)  $(c+10)(c-10)$

13)  $d^2 - 12d + 36$

13)  $(d-6)^2$

14)  $y^2 + 18y + 81$

14)  $(y+9)^2$

15)  $a^2 + 7a - 18$

15)  $(a+9)(a-2)$

16)  $b^2 + 8b + 7$

16)  $(b+7)(b+1)$

17)  $2x^2 - 3x - 5$

17)  $(2x-5)(x+1)$

18)  $4z^2 + 4z - 15$

18)  $(2z-3)(2z+5)$

19)  $2ak + k - 6a - 3$

19)  $(2a+1)(k-3)$