Name: _____

Review Material – Ch. 1-6

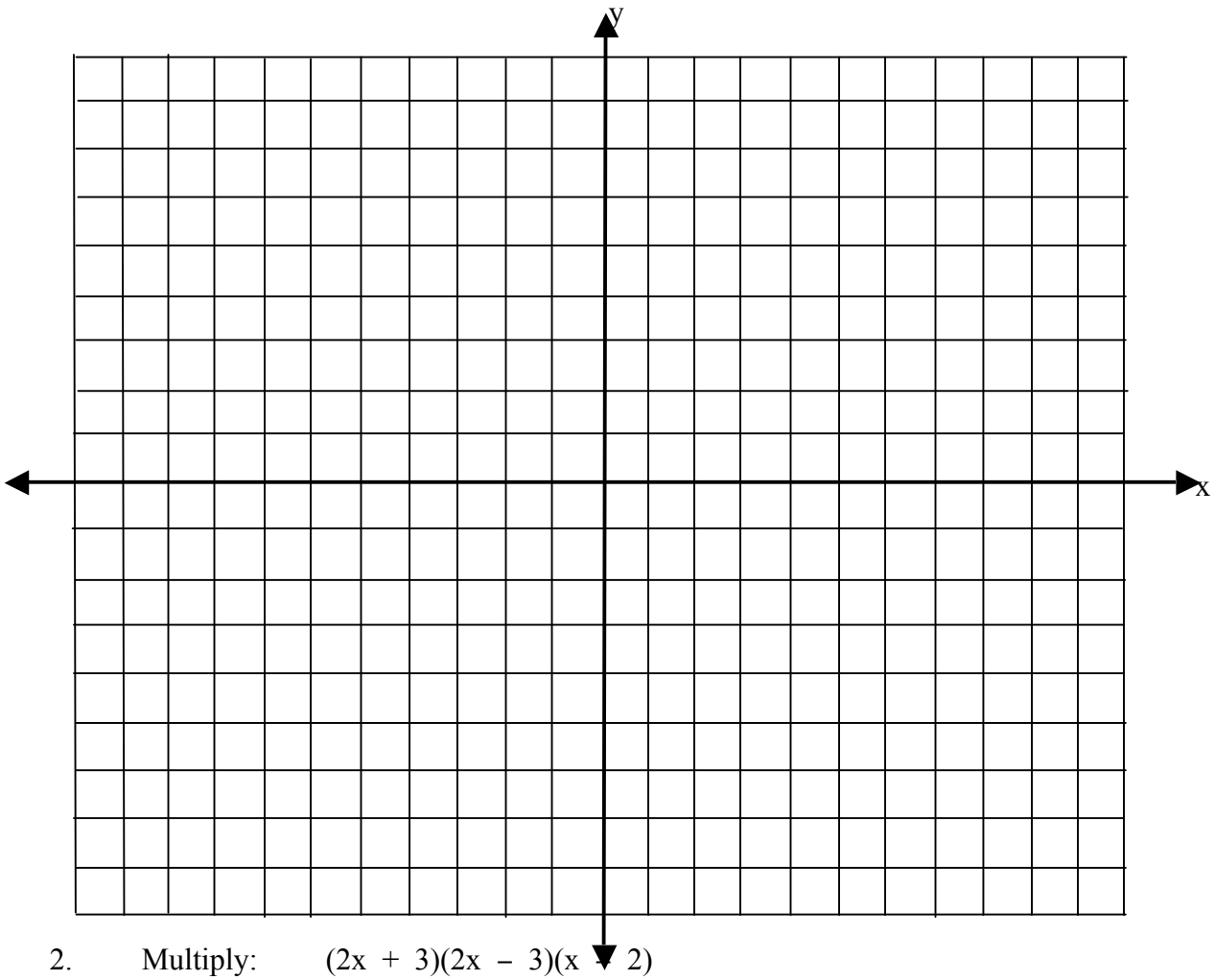
1. Solve the system of linear inequalities by graphing.
Use either substitution or elimination to **find the point of intersection** of the boundary lines. Work must be shown and be valid in yielding the point.

$x \geq 0$

$y \geq 0$

$x + 2y \leq 6$

$-5x + y < 5$



2. Multiply: $(2x + 3)(2x - 3)(x + 2)$

3. Using long division, find the quotient $(4x^3 - 5x) \div (2x - 1)$

4. Using $f(x) = x + 2$, $g(x) = 3x^2 - x - 4$
simplify the following

a) $(f + g)(x)$ b) $g(-1)$ c) $(f \bullet g)(-1)$

5. Factor each of the following completely

a) $6x^3y^2 - 2x^3z - 9y^2 + 3z$ b) $x^2 + 16$

c) $4x^2 - 8x - 6$ d) $8x^3 - 27$

e) $2x^3 + 54$ f) $16x^2 - 40xy + 25y^2$

g) $x^2 + 4xy + 4y^2 - 16$ h) $(x + 1)^2 + 3(x + 1) - 40$

6. Find the determinant of the following matrix.

$$\begin{bmatrix} 1 & -3 & 4 \\ 4 & 1 & 1 \\ -2 & -3 & -5 \end{bmatrix}$$

7. Solve the following using Gaussian Elimination:

$$2x + 3y = 7$$
$$5x - 4y = 9$$

8. Solve the system of equations using any method. To receive any credit this must be done showing all work and valid methods of substitution, elimination or matrices.

$3x - 5y + 2z = 8$ and $-x - y - z = -3$ and $3x - 2y + 4z = 10$

9. Describe, in slope-intercept form (where possible) for the line described by the given scenario.

a) Parallel to the line $2x + 3y = 6$ through $(0, 5)$

b) Through the points $(5,7)$ and $(6, 7)$

c) Perpendicular to the line $y = {}^5/_7x + 9$ through the point $(-{}^1/_2, {}^3/_4)$

10. For the following circle the most appropriate answer: $\dfrac{-3 \mid 3 - 18 \mid \div 9 + 2}{5 + 2[-6 - (-2)] + -2^2}$

11. Simplify. Leave no negative exponents.

a) $(7x^2y^3)(2x^{-3}y)$ b) $(-5x^3y)^3$

c) $7x^0 - (6x^2)^0$

d) $\dfrac{3x^3\,y}{18x^5y^{-3}}$

12. Solve each of the following and give the solution in interval notation.

a) $|x - 6| + 7 > 5$

b) $|x + 5| = |2x - 1|$

c) $\left|\frac{5x - 7}{2}\right| - 1 \leq 3$

e) $|x - 5| \leq -1$

13. You need to show the complete solution to the following problem and then put the solution in interval notation. $|2x + 1| > 5$

14. Solve each equation.

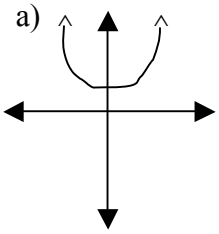
a) $5x - 3(x - 7) = 7(x + 3)$

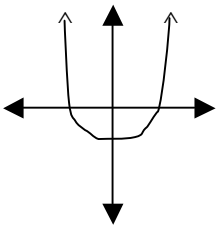
b) $3(x - 5) = 5(x + 2) - 2x$

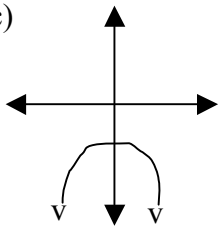
c) $\frac{1}{3}x - \frac{1}{15}(x - 7) = 7(\frac{1}{15}x + \frac{4}{15})$

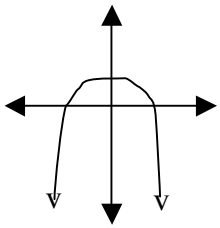
15. Correctly simplify: $\frac{1}{4}x^2 - \frac{2}{3}(\frac{1}{2}x^2 - \frac{2}{3}x) - 1$

16. Which is most likely the graph of $y = -x^2 + 1$

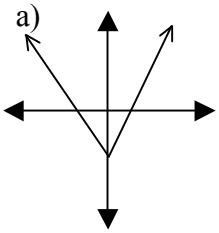
a) 

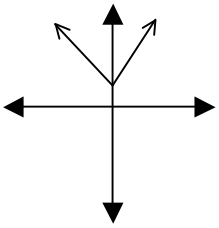
b) 

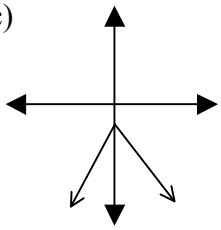
c) 

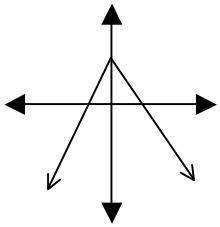
d) 

17. Which is most likely the graph of $y = |x| - 2$

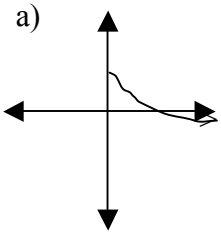
a) 

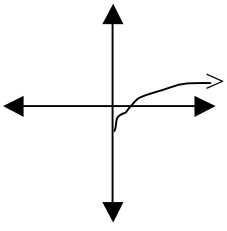
b) 

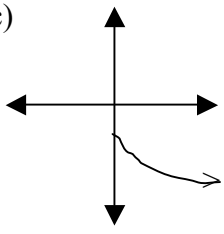
c) 

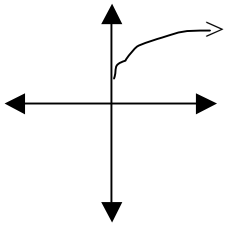
d) 

18. Which is most likely the graph of $y = -\sqrt{x} - 3$

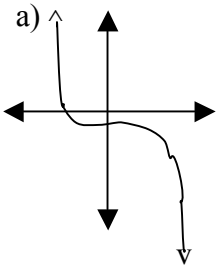
a) 

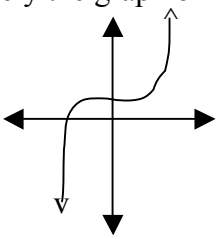
b) 

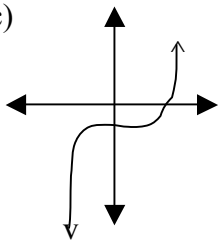
c) 

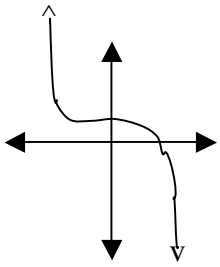
d) 

19. Which is most likely the graph of $y = -x^3 + 3$

a) 

b) 

c) 

d) 

20. Circle the correct answer in standard notation [the answers follow each part as i), ii), etc.]:

a) 1.02×10^{-4}

b) -1.25×10^{6}

21. Write in correct scientific notation:

a) -0.0552 b) 9,250, 000

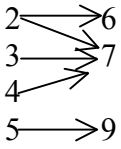
22. Multiply using exponents rules & write in correct scientific notation. Do not multiply in standard form.

$(1.2 \times 10^{7})(9 \times 10^{-2})$

23. Add the following using scientific notation. Do not change to standard form and then add. I must see the correct manipulations of scientific notation for the sum.

$(2.5 \times 10^{8}) + (1.1 \times 10^{6})$

24. State whether the following **is or is not** a function (state reasons). Give the **domain and range** of each.

a) {(0,2),(5, 2),(3, 2)} b) $f(x)= 3x^3 + 2$ c) 

25. How many liters of a 60% hydrogen peroxide solution must be mixed with 60 liters of a 21% hydrogen peroxide solution to obtain a 50% solution? **Fill in the following table** completely and **write the equation** based upon the table that could be used to solve. **Do not solve.**

Type	Volume (liters)	% of hydrogen peroxide	Pure hydrogen peroxide
Weak			
Strong		60%	
Mix			