Name: _____ Period: _____ Date: _____

PAP ALGEBRA 2 FALL SEMESTER EXAM REVIEW

Use the given information to solve #1-3.

1. Given the table:

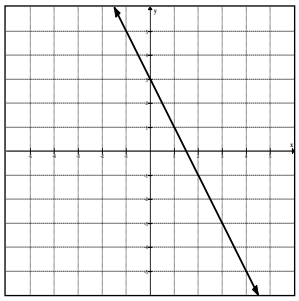
x	-5	-2	1	4	7
y	-15	-6	3	12	21

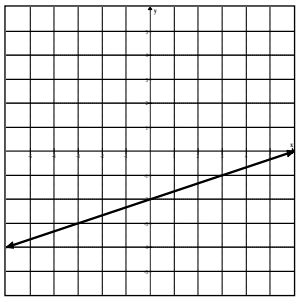
   a. Write an equation of a line in slope-intercept form.
   b. Write an equation of a line parallel to the line in part a.
   c. Write an equation of a line perpendicular the line in part a.

2. Given the point: (2,-4) and a slope of: $-\frac{3}{2}$.
   a. Write an equation of a line in slope intercept form.
   b. Write an equation of a line parallel to the line in part a.
   c. Write an equation of a line perpendicular the line in part a.

3. Given the line: $2x - 7y = 28$
   a. Find the x-intercept and y-intercept.
   b. Find the slope.
   c. Give three ordered pairs that are solutions to the given equation.

Write the equation of the line graphed in both slope-intercept and in point-slope form.

4. 

5. 

Find the range of the function for the given domain.

6. $f(x) = -2x + 6$, the $D = \{-1, 2, 4\}$
7. $f(x) = x^2 - 2$, the $D = \{-3, -1, 2\}$

Graph each of the following systems of inequalities and determine if $(\mathbf{5}, \mathbf{0})$ ***is a solution.***

8. $\begin{cases} 3y + 2x < 6 \\ 2x - y > 7 \end{cases}$

9. $\begin{cases} y \leq 5 \\ x > -6 \\ y \geq \frac{2}{3}x + 2 \end{cases}$

Given matrices A = $\begin{bmatrix} \mathbf{1} & \mathbf{-2} \\ \mathbf{10} & \mathbf{2} \end{bmatrix}$ ***and B =*** $\begin{bmatrix} \mathbf{4} & \mathbf{0} \\ \mathbf{-2} & \mathbf{5} \end{bmatrix}$

10. Find matrix A – B.
11. Find matrix AB.

Use the given information to solve #12-15.

In total, 2 shirts and 3 pair of jeans cost $268. Also, 3 shirts and 2 pairs of jeans cost $231.

12. Write a system of equations that represents the situation.
13. Write the matrix equation in the form $AX = B$
14. Write the matrix equation in the form $X = A^{-1}B$
15. Solve the system of equations to find how much shirts and jeans cost.

Use the given information to solve #16-18

Quadratic parent function reflected over x, stretched horizontally by 2, translated left 2 and down 5.

16. Write the equation of the function.
17. Graph the function.
18. Find the domain and range.

Use the following function to solve #19-21

$f(x) = |x - 4| + 3$

19. Describe the changes with regard to the parent function.
20. Graph the function.
21. Describe the domain and range.

Factor completely.

22. $25x^2 - 35x$
23. $8x^2 - 18$
24. $2x^3 - 14x^2 + 24x$

Simplify.

25. $\sqrt{99x^7y^3}$
26. $3\sqrt{-72}$

Perform the indicated operation.

27. $(5 + 2i) - (-2 + 8i)$
28. $(9 - 3i)(2 + 5i)$

29. A pharmacist mixed some 15%-saline solution with some 20%-saline solution to obtain 200 mL of a 17%-saline solution. How much of the 15%-saline solution did the pharmacist use in the mixture? (Hint: set up a system of equations and solve)

30. **Linear Programming:** A farmer has a 320 acre farm on which she plants two crops: corn and soybeans. For each acre of corn planted, her expenses are $50 and for each acre of soybeans planted, her expenses are $100. Each acre of corn requires 100 bushels of storage and yields a profit of $60; each acre of soybeans requires 40 bushels of storage and yields a profit of $90. The total amount of storage space available is 19,200 bushels and the farmer can only spend $20,000. (Hint: change the window of your calculator so you can see the graphs)
    a. Define your variables and set up a system of inequalities.
    b. Write an equation representing the profit.
    c. How many of each crop needs to be planted to maximize profit? (Show your work algebraically)

31. As Earth's population continues to grow, the solid waste generated by the population grows with it. Governments must plan for disposal and recycling of ever growing amounts of solid waste. Planners can use data from the past to predict future waste generation and plan for enough facilities for disposing of and recycling the waste.

Year	Tons of Solid Waste Generated (in thousands)
1990	19,358
1991	19,484
1992	20,293
1993	21,499
1994	23,561

    a) Make a scatterplot of the data, letting *x* represent the number of years since 1990.
    b) Use a graphing calculator to write the equation of best fit.
    c) predict the average tons of waste in 2000 and 2005.