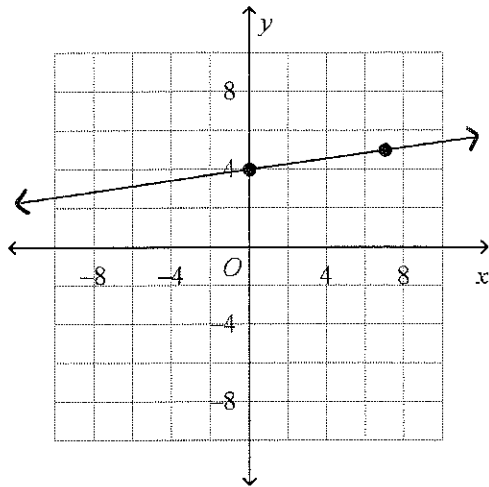


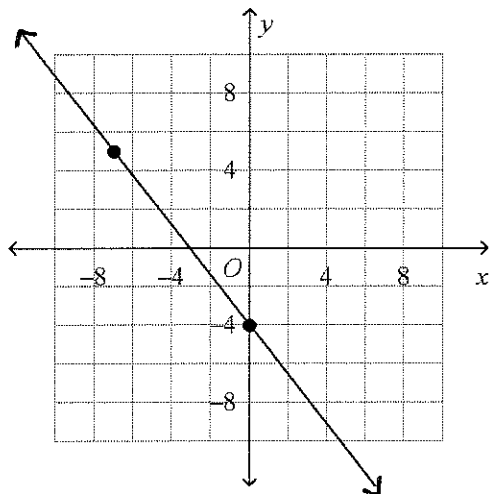
MT P - MT 3 part ¹ exam REVIEW

Short Answer

1. Write equation of line. Identify parent function. Describe transformation



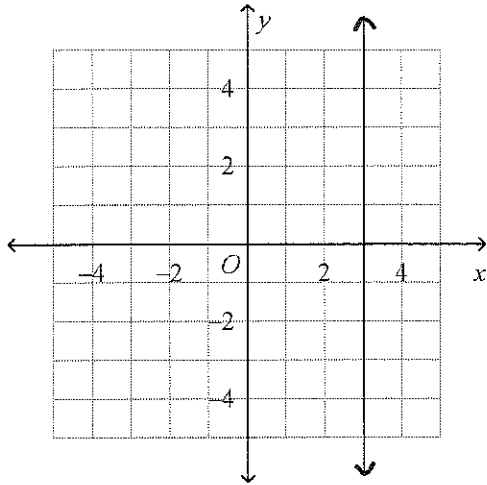
2. Write equation of line. Identify parent function. Describe transformation



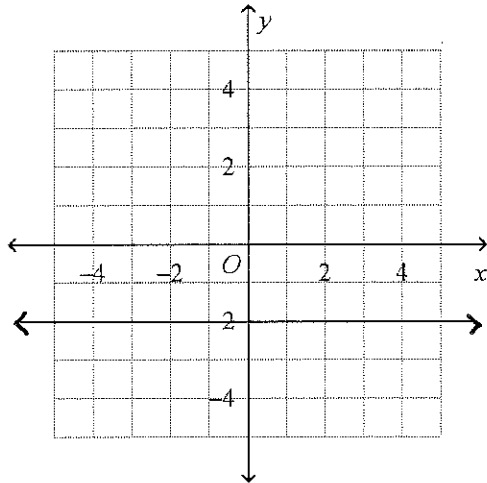
3. Identify the slope. Find the x and y intercepts.
 $3x + 6y = -12$

4. Identify the slope. Find the x and y intercepts.
 $2x - 4y = 8$

5. Write equation of line. Interpret slope



6. Identify function family. Describe transformation



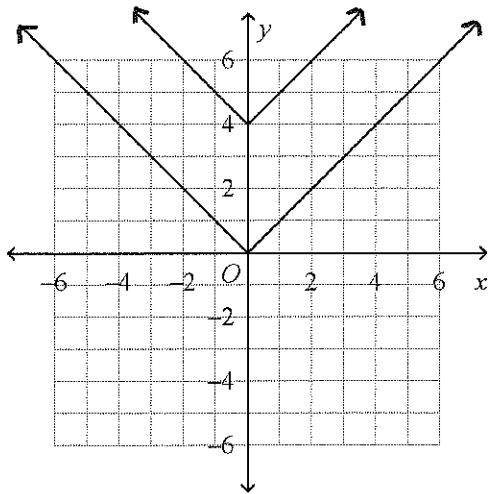
Graph the absolute value equation.

7. $y = |x + 4|$

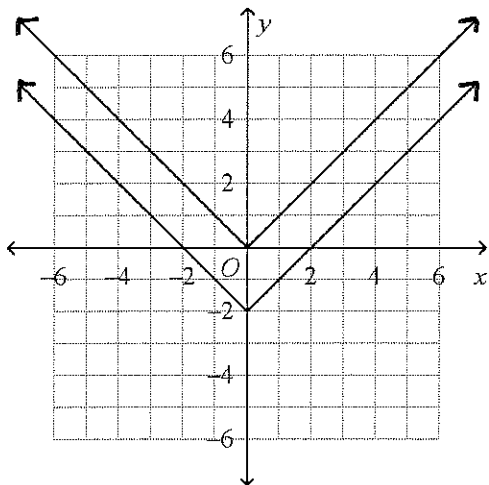
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8. Identify the parent function. Describe the transformation

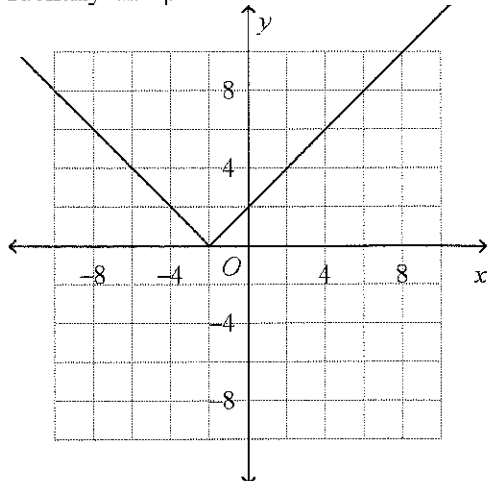


9. Identify the parent function. Describe the transformation

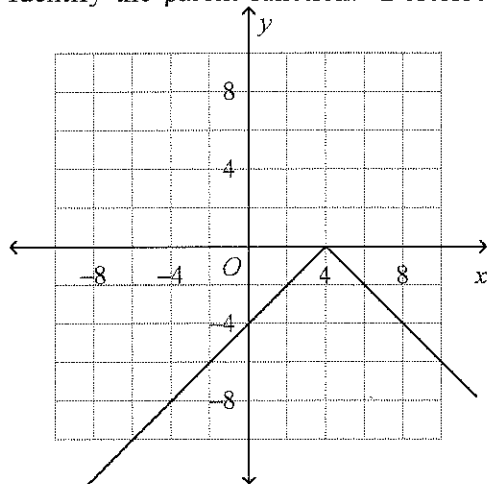


10. Graph the equation of $y = |x|$ translated 4 units up.

11. Identify the parent function. Describe the transformation



12. Identify the parent function. Describe the transformation



Solve by factoring or using square roots.

13. $x^2 + 14x + 48 = 0$

14. $x^2 - 6x + 8 = 0$

15. $x^2 - 2x - 63 = 0$

16. $x^2 - 25 = 0$

17. $49x^2 - 4 = 0$

18. The function $P = -h^2 + 60h - 400$ models the daily profit a barbershop makes from haircuts that include a shampoo. Here P is the profit in dollars, and h is the price of a haircut with a shampoo. Find the price that yields the maximum daily profit and the amount of the daily profit.

Find the zeros for the function.

19. $f(x) = 3x^2 - 21$

20. $f(x) = 5x^2 - 30$

21. The function $y = -16t^2 + 486$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.

22. The function $y = -16t^2 + 264$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.

Solve the quadratic equation by completing the square.

23. $x^2 + 8x + 14 = 0$

24. $x^2 + 2x - 9 = 0$

Find c . Then, factor and write as a square of a binomial.

25. $x^2 - 8x + c$

26. $x^2 + 10x + c$

27. Find a quadratic function to model the values in the table. Predict the value of y for $x = 6$.

x	y
-1	2
0	-2
3	10

28. Dalco Manufacturing estimates that its weekly profit, P , in hundreds of dollars, can be approximated by the formula $P = -3x^2 + 6x + 10$, where x is the number of units produced per week, in thousands.
- How many units should the company produce per week to earn the maximum profit?
 - Find the maximum weekly profit.

29. Dalco Manufacturing estimates that its weekly profit, P , in hundreds of dollars, can be approximated by the formula $P = -5x^2 + 10x + 3$, where x is the number of units produced per week, in thousands.
- How many units should the company produce per week to earn the maximum profit?
 - Find the maximum weekly profit.

Write the equation of the parabola in standard form.

30. Write an equation of a parabola with vertex at $(2, -3)$ and through $(-2, 45)$
31. A parabola has an axis of symmetry $x = 4$ and passes through the point $(0, -50)$. Find another point that lies on the graph of the parabola.

Solve the system by graphing.

$$32. \begin{cases} -x - 2y = 2 \\ x - y = -2 \end{cases}$$

$$33. \begin{cases} -5x - y = 12 \\ 3x - y = -12 \end{cases}$$

Solve the system by the method of substitution.

$$34. \begin{cases} x + y = 6 \\ x - 2y = -9 \end{cases}$$

$$35. \begin{cases} x + y = -5 \\ 3x - y = 1 \end{cases}$$

Use the elimination method to solve the system.

$$36. \begin{cases} x + 5y = 5 \\ x - 2y = -9 \end{cases}$$

$$37. \begin{cases} 3x + 3y = -15 \\ 7x - 4y = -13 \end{cases}$$

$$38. \begin{cases} -x + 2y = 10 \\ -3x + 6y = 11 \end{cases}$$

$$39. \begin{cases} x - 3y = 9 \\ -x + 3y = -9 \end{cases}$$

40. For $f(x) = 5x + 1$, find $f(-4)$.

41. For $f(x) = -2x - 3$, find $f(-2)$.

Write an equation in slope intercept form of the line passing through the given point with the given slope.

42. slope = 3; $(-2, -4)$

43. slope = -3 ; $(-5, 5)$

Find an equation for the line:

44. through $(-5, 6)$ and perpendicular to $y = -\frac{3}{4}x - 2$.

45. through $(-4, 6)$ and parallel to $y = -3x + 4$.

46. through $(-5, -6)$ and horizontal.

47. through $(3, -3)$ and vertical.

48. Kendra owns a restaurant. She charges \$1.50 for 2 eggs and one piece of toast, and \$.90 for one egg and one piece of toast. Write a system of equations to determine how much she charges for each egg and each piece of toast. Let x represent the number of eggs and y the number of pieces of toast.

49. The table shows the amount of time a student spends practicing each week and her typing speed.

Practice (hours)	1	2	3	4	5
Typing Speed (words per minute)	21	26	35	37	40

- Use a graphing calculator to find the equation of the line of best fit.
 - Use your equation to predict the student's typing speed if she spends 8 hours practicing each week.
 - What does the slope indicate?
50. State the dimensions of the matrix. Identify the indicated element.

$$A = \begin{bmatrix} -9 & 4 \\ -7 & 0 \\ -8 & 8 \end{bmatrix}, a_{21}$$

51. State the dimensions of the matrix. Identify the indicated element.

$$A = \begin{bmatrix} -9 & 0 \\ -8 & 4 \\ -1 & 8 \end{bmatrix}, a_{12}$$

Solve the system. *Write out coefficient matrix, variable matrix and constant matrix.*

$$52. \begin{cases} -5x + 4y - z = 11 \\ 3x - 3y - 5z = 17 \\ -2x - 5y + 4z = 0 \end{cases}$$

$$53. \begin{cases} 3x + 2y + 5z = 0 \\ 3x - 5y + z = -6 \\ -x + 5y + 3z = 2 \end{cases}$$

54. Decide whether a linear model is reasonable. Why or why not? If it is, write its equation.

$$\{(1, 7), (-2, 1), (3, 13), (-4, -3), (0, 5)\}$$

55. Write the equation that is the translation of $y = |x|$ left 1 unit and up 2 units.

56. Write the equation that is the translation of $y = |x|$ right 12 units and down 3 units.
57. Describe the transformation done to $f(x) = |x|$ in the given functions:
 a. $g(x) = -|x-2|+3$
 b. $h(x) = |2x + 4| -3$
58. What is the domain and range for
 a. absolute value function?
 b. constant function?
 c. linear function?
 d. quadratic function?
59. You design a computer game. The revenue for x downloads is $y = 3x$. Your profit is \$45 less than 80%(.8) of the revenue for x downloads. Write the equation. What is the profit for 150 downloads?
60. The total reimbursement for driving a company car m miles can be modeled by the function $f(x) = .4m +3$. After a policy change due to rising fuel cost, 8 dollars more was added and then the total reimbursement was multiplied by 1.2. What is the new reimbursement equation? How much would an employee get for a 80 mile round trip?
61. Graph $y = 3x^2 - 12x + 13$. Label the vertex and the axis of symmetry. State the domain and range.
62. Graph $y = 2x^2 - 4x - 2$. Label the vertex and the axis of symmetry. State the domain and range.
63. Graph $y = -2(x + 3)^2 - 2$. Identify the vertex and axis of symmetry
64. Graph $y = (x - 2)^2 + 4$. Identify the vertex and axis of symmetry
65. In an experiment, a petri dish with a colony of bacteria is exposed to cold temperatures and then warmed again.
 a. Find a quadratic model for the data in the table.
 b. Use the model to estimate the population of bacteria at 9 hours.

Time (hours)	0	1	2	3	4	5	6
Population (1000s)	5.1	3.03	1.72	1.17	1.38	2.35	4.08

66. Identify the vertex and axis of symmetry. Describe where the function is increasing and decreasing. State the domain and range.
 $f(x) = 2(x -3)^2 - 5$
67. Identify the vertex and axis of symmetry. Describe where the function is increasing and decreasing. State the domain and range.
 $f(x) = -(x + 2)^2 +3$

68. Identify the vertex and axis of symmetry. Describe where the function is increasing and decreasing. State the domain and range.

$$f(x) = -3x^2 + 12x + 10$$

69. Identify the vertex and axis of symmetry. Describe where the function is increasing and decreasing. State the domain and range.

$$f(x) = 2x^2 + 12x - 6$$

70. Let the graph g have a vertical stretch of 2 followed by a translation 3 units up and 4 units left of the graph of $f(x) = x^2$

71. Let the graph g have a reflection over the x axis followed by a translation 5 units right and 7 units down of the graph of $f(x) = x^2$

72. Change matrices to system

$$\textcircled{A} \left[\begin{array}{cc|c} 3 & -2 & 12 \\ 5 & 1 & -8 \end{array} \right]$$

$$\textcircled{B} \left[\begin{array}{cc|c} -1 & 3 & -11 \\ -2 & -5 & 8 \end{array} \right]$$