Algebra 2 Name_____ ID: 1

Exam review

Date_____ Period____

Evaluate each expression.

1) $(6 \cdot 2 - 2 \cdot 2) \div -2$

2) $-1 - 3^2 \cdot -4 + -6 + 6$

Evaluate each using the values given.

3) $m - (p^2)^2$; use $m = -4$, and $p = 2$

4) $z - (y^2 - z)$; use $y = -3$, and $z = -1$

5) Identify all of the sets of numbers to which each belongs:
a. 4 b. -2 c. 2/3 d. $\sqrt{5}$

6) Name the property: 2(x+3)=2x+6

7) Name the property: $4 \times \frac{1}{4} = 1$

8) Name the property: $9 + y + 2 = 9 + y + 2$

Solve each equation.

9) $84 = -4(-5 - 2r)$

10) $3(r + 6) = 4(1 - r)$

11) $-\frac{1}{8} = k - \frac{3}{2}k$

12) $1\frac{1}{2}a - \frac{17}{4} = \frac{1}{4}a - \frac{11}{4} + \frac{1}{2}a$

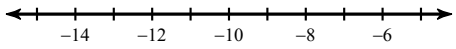
13) $-4(8 + 8x) - 2 = -5(6x - 4) - 2x$

14) $\frac{|n + 7|}{2} = 1$

15) $|10n + 1| + 7 = 106$

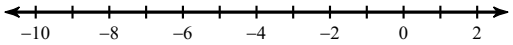
Solve each inequality and graph its solution.

16) $102 > -3k - 2(4k - 7)$

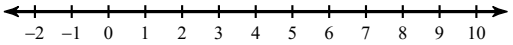


Solve each compound inequality and graph its solution.

17) $5b + 6 \geq -9$ or $-2b + 1 > 13$

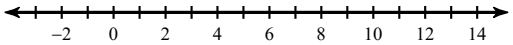


18) $8 - 9b \geq -28$ or $-7b - 2 \leq -37$

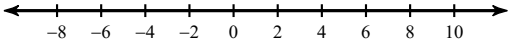


Solve each inequality and graph its solution.

19) $\left|k - 6\right| \geq 4$



20) $\left|\frac{b}{6}\right| + 7 \geq 8$

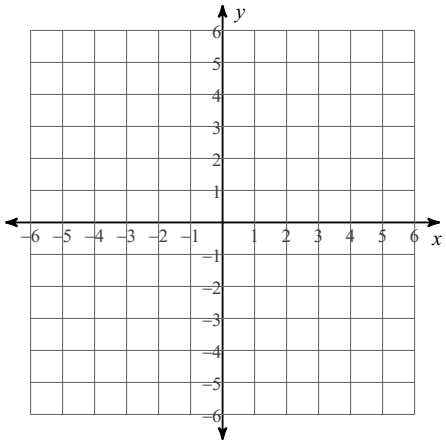


21) Solve for b: $N = 2a^2b$

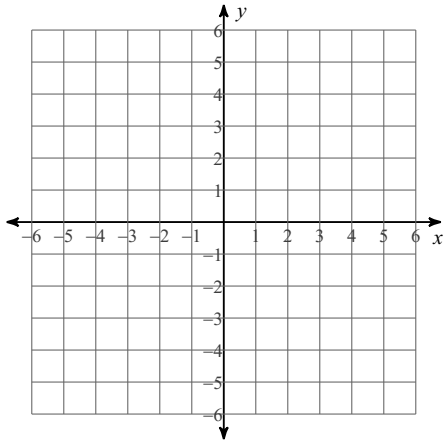
22) Solve for u : $-3u - w = u + 5w$

Sketch the graph of each line.

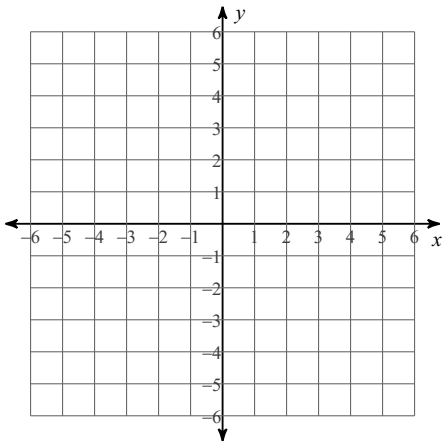
23) $y = -2$



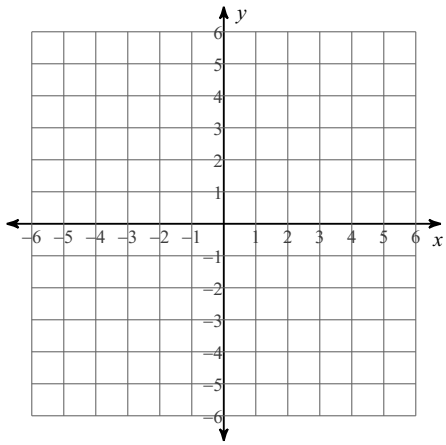
24) $y = \frac{3}{2}x - 1$



25) $7x + y = 4$

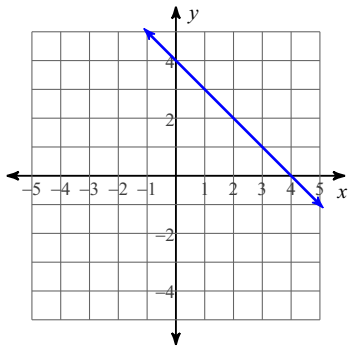


26) $3x + 2y = -6$



Write the slope-intercept form of the equation of each line.

27)



Write the slope-intercept form of the equation of each line given the slope and y-intercept.

28) Slope = 4, y-intercept = 3

Write the slope-intercept form of the equation of each line.

29) $x + y = -7$

30) $4x + 3y = 3$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

31) through: $(-5, -5)$, slope = $\frac{2}{5}$

32) through: $(1, 0)$, slope = 1

Write the slope-intercept form of the equation of the line through the given points.

33) through: $(3, 3)$ and $(3, 5)$

34) through: $(4, -1)$ and $(-1, 0)$

Write the slope-intercept form of the equation of the line described.

35) through: $(2, 2)$, parallel to $y = 3x + 5$

36) through: $(4, 5)$, perp. to $y = -\frac{4}{5}x - 1$

37) Given {(2,5), (3,-2), (4, 1), (5, 5)}

Is this a function?

List the domain:

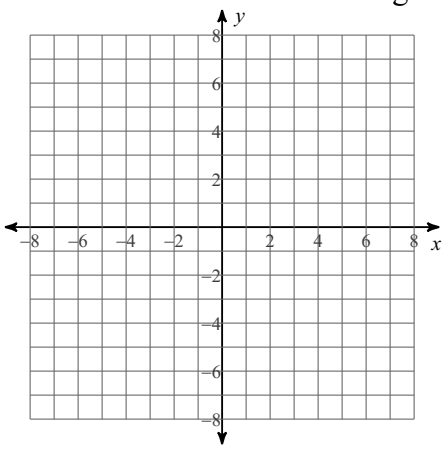
List the Range:

Make a mapping diagram.

38) Graph $y = 2x - 5$

Is this a function?

Domain: Range:



39) Write an example of a relation that is not a function and describe why it is not.

Evaluate each function.

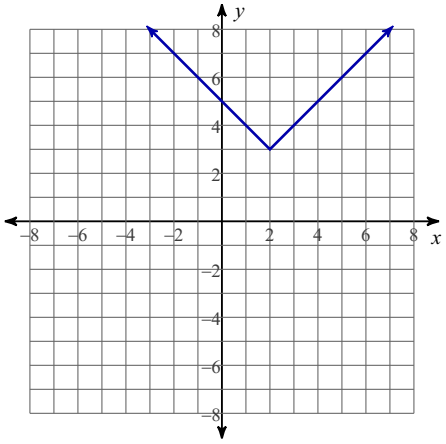
40) $k(x) = 4x - 4$; Find $k(-4)$

41) $g(x) = x^2 + 4$; Find $g(9)$

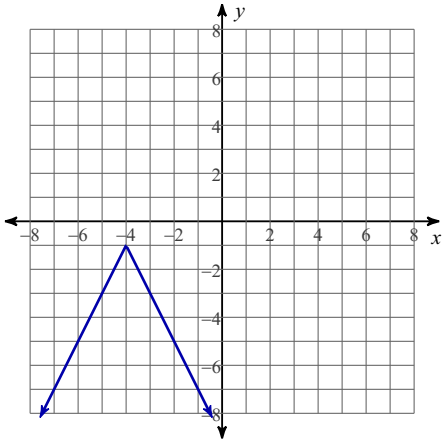
42) $f(a) = 4a + 3$; Find $f(3a)$

43) Find the slope between the points.
a) (4, -1) and (-7,5) b) (3, 7) and (3, 1)

44) Find an equation for the graph.



45) Find an equation for the graph.



Solve each system by elimination.

46) $-3x + 3y = 6$
$-10x - 12y = 20$

47) $5x - 30y = -15$
$-3x + 18y = 9$

Solve each system by substitution.

48) $-6x + 7y = 20$
$x - 6y = -13$

49) $-x + 3y = -20$
$-4x - 4y = -16$

50) Shayna's school is selling tickets to a play. On the first day of ticket sales the school sold 14 adult tickets and 7 student tickets for a total of $161. The school took in $68 on the second day by selling 11 adult tickets and 1 student ticket. Find the price of an adult ticket and the price of a student ticket.

51) When you reverse the digits in a certain two-digit number you decrease its value by 45. Find the number if the sum of its digits is 11.

Solve each system.

52) $-5x + 3y - z = -22$
$-6x + y + 4z = -29$
$x + y + z = -2$

53) $2r - 2s - t = 3$
$r - 2s - 5t = 23$
$-6r + 3s + 5t = -22$

Solve each equation by taking square roots.

54) $6k^2 - 1 = 599$

55) $7x^2 + 8 = -10$

Solve each equation by factoring.

56) $r^2 = 14 + 5r$

57) $n^2 - 64 = 0$

58) $5x^2 = -4x + 12$

59) $3n^2 + 4 = -13n$

60) $6b^2 = -3b + 3$

61) $12m^2 + 3 = -12m$

Find the value that completes the square and then rewrite as a perfect square.

62) $y^2 + 11y +$ __

Solve each equation by completing the square.

63) $k^2 - 18k - 5 = 10$

64) $6n^2 + 12n - 9 = 9$

Find the discriminant of each quadratic equation then state the number and type of solutions.

65) $-5x^2 + 2x + 2 = 10$

66) $9x^2 - 10x + 16 = 10$

Solve each equation with the quadratic formula.

67) $12x^2 - 5x = -6$

68) $12x^2 - 8 = -12x$

69) Find the equation of the axis of symmetry and the coordinates of the vertex of $y = 2x^2 - 6x + 1$

Write a quadratic function that has the given zeros.

70) $1, \ \frac{5}{4}$

Write the equation in vertex form using complete the square. Identify the vertex and axis of symmetry.

71) $y = x^2 - 10x - 56$

72) A rock is thrown from the top of a tall building. The distance d, in feet, between the rock and the ground t seconds after it is thrown is given by $d = -16t^2 - 4t + 412$. How long after the rock is thrown is it 410 feet from the ground?

Simplify.

73) $(6 - 6i) + (-6 + 3i)$

74) $(3 + 7i) - (-4 + 2i)$

75) $(-6 + 7i)(5 + 3i)$

76) $(-4 + 5i)^2$

77) $\dfrac{9}{-4 + 6i}$

78) $\dfrac{7i}{10 - 10i}$

79) $\sqrt{-64}$

80) $\sqrt{-54}$

Simplify. Your answer should contain only positive exponents.

81) $4x^4y^{-3} \cdot x^2y^0$

82) $y^{-4} \cdot \left(x^{-1}y^{-3}\right)^4$

83) $\dfrac{x^2y^3}{x^2y^4}$

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

85) $\left(\dfrac{m^{-3}n^{-3} \cdot mn}{mn^3}\right)^4$

86) $\dfrac{\left(2vu^3\right)^4}{\left(\left(2uv^0\right)^4 \cdot 2u^{-1}v^{-3}\right)^2}$

Name each polynomial by degree and number of terms.

87) $9x^6$

88) $8n^5$

Simplify each expression.

89) $(4p + 8p^4 + 4p^3) + (7p^2 + 2p - 6p^4)$

90) $(5x - 4x^4 - 2x^2) + (4x + 6x^2 + 7x^4)$

Find each product.

91) $(3x + 8)(4x^2 - x - 2)$

92) $(8x - 4)(x^2 + 5x + 2)$

Divide. Use synthetic division once and long division once.

93) $(x^3 - 9x^2 + x) \div (x - 9)$

94) $(v^3 + 7v^2 - 12v + 44) \div (v + 9)$

Factor each completely.

95) $2x^3 - 7x^2 - 2x + 7$

96) $2u^3 + 250$

97) $6x^4 + 30x^2 - 300$

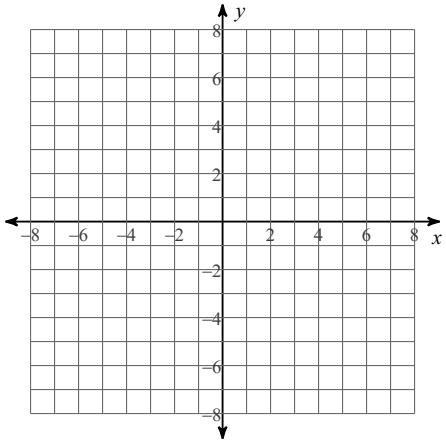
Describe the end behavior of each function.

98) $f(x) = -x^4 + 3x^2 + x - 2$

99) $f(x) = -x^5 + 3x^3 - 2x + 2$

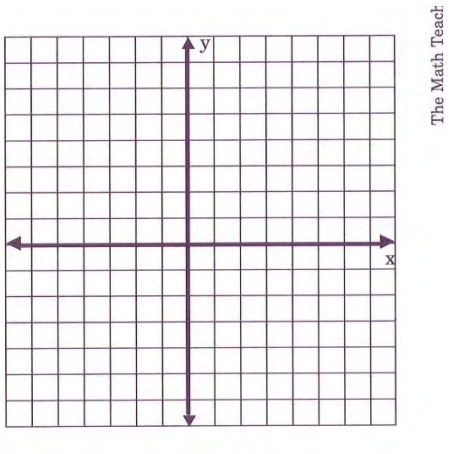
State the maximum number of turns the graph of each function could make. Then sketch the graph. State the number of real zeros. Approximate each zero to the nearest tenth. Approximate the relative minima and relative maxima to the nearest tenth.

100) $f(x) = x^3 - x^2 - 5x + 3$

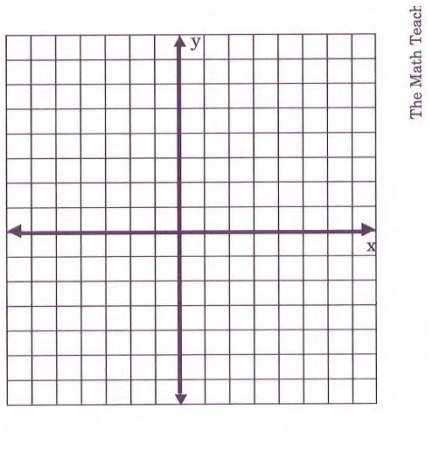


Graphs.

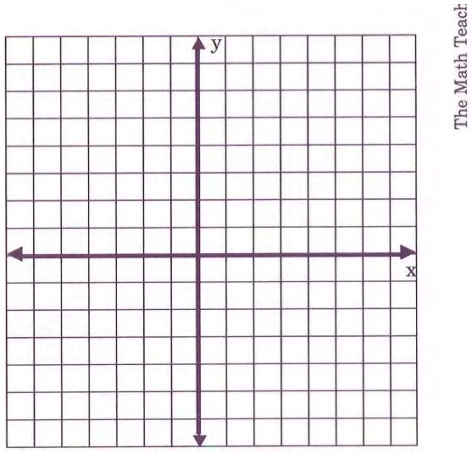
101. $y = x^2 - 4x - 12$



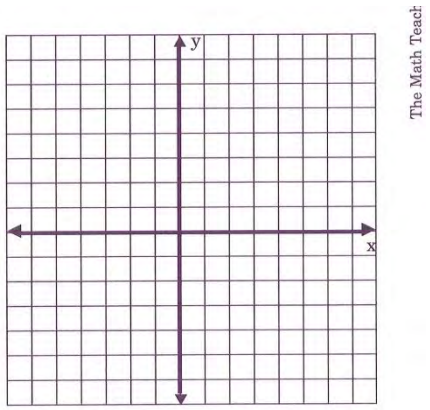
102. $y < \frac{2}{5}x - 5$



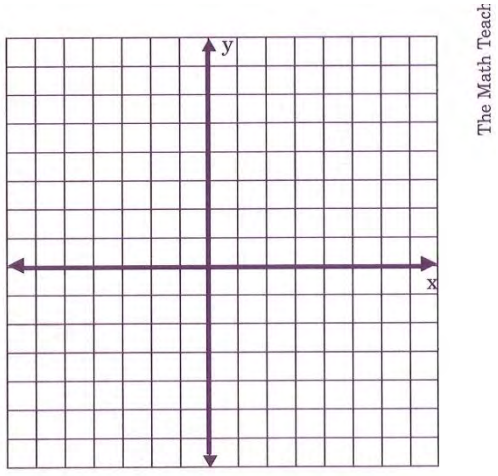
103. $y = |x - 2| + 1$



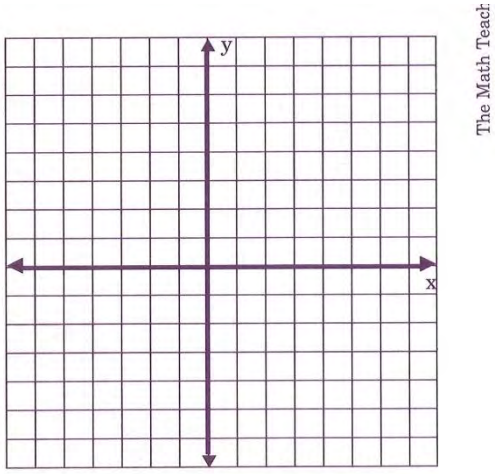
104. $y = x - 4$
$3x + 2y = 12$



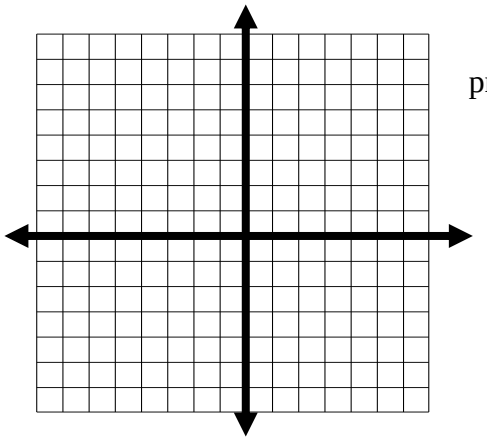
105. $y = -2x + 4$



106. $y = -3(x - 2)^2 + 4$

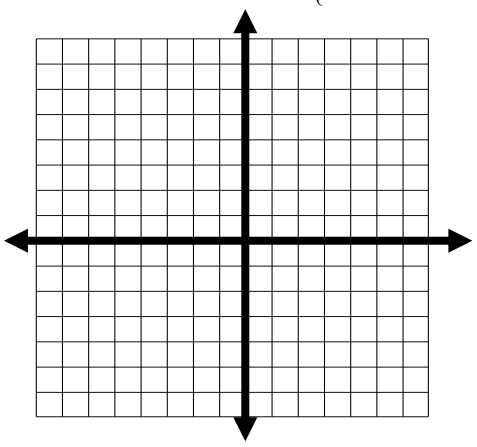


107. Given data: (3, 1) (5, 2) (-1, -4)(-3, -6)(6, 3)
Draw a scatterplot and line of best fit.

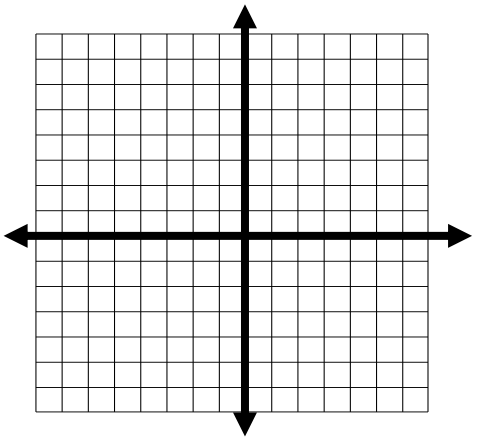


Using (5, 2) (-1, -4), Find an equation for your line and predict the value at x=7.

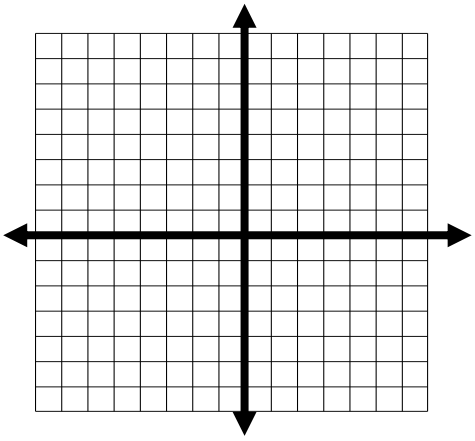
108. Graph. $f(x)=\begin{cases}-x+5 & x<-2\\ 2x+3 & x\geq -2\end{cases}$



109. $f(x)=\begin{cases}2 & 0\leq x<3\\ 4 & 3\leq x<6\\ 7 & 6\leq x<8\end{cases}$

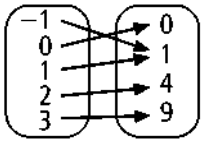


110. $4x+3y\leq 6$
$x-4y\leq 12$



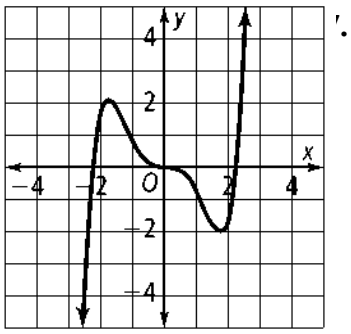
Semester 1 Review Algebra 2 Name:_____

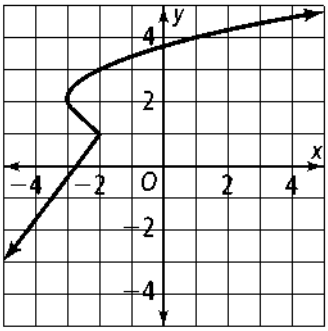
111. Determine whether each relation is a function.

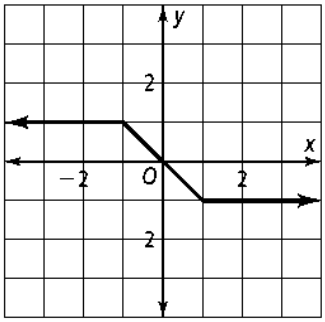


Domain Range

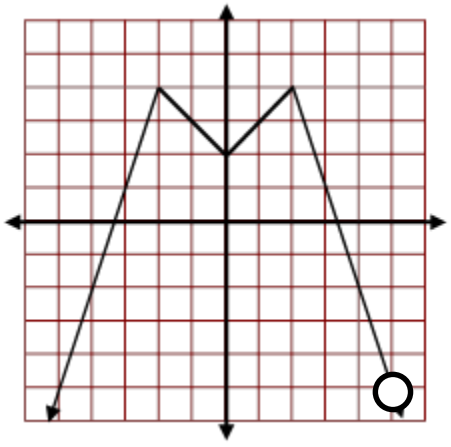
112. Use the vertical line test to determine whether each graph represents a function.







113. Given the graph. Find the following.



Relative maximum:

Relative minimum:

Domain: Range:

X intercepts: Y intercepts:

Avg rate of change from x=-2 to x=4

Increasing/ decreasing intervals:

f(0)= f(3)=