Algebra 2 Name Key ID: 1

Exam review Date Dec 2017 Period

Evaluate each expression.

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

$(12-4) \div 2$

$8 \div -2 = -4$

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

$-1 - 9 \cdot -4 + (-6) + 6$

$-1 + 36 + (-6) + 6$

35

Evaluate each using the values given.

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

$-4 - (2^2)^2 \rightarrow -4 - 16 = -20$

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

$-1 - (9 - (-1)) \rightarrow -1 - 10 \rightarrow -11$

5) Identify all of the sets of numbers to which each belongs:

a. 4 b. -2 c. 2/3 d. $\sqrt{5}$

W Z Q I

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

Distributive

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

inverse multiplication

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

commutative

Solve each equation.

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

$84 = 20 + 8r$

$64 = 8r$

$r = 8$

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

$3r + 18 = 4 - 4r$

$7r = -14$

$r = -2$

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

$-1 = 8k - 12k$

$-1 = -4k$

$\frac{1}{4} = k$

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

$6a - 17 = a - 11 + 2a$

$6a - 17 = 3a + 1$

$3a = 6$

$a = 2$

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

$-32 - 32x - 2 = -30x + 20 - 2x$

$-34 - 32x = -32x + 20$ no solution

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

$|n+7| = 2$

$n+7 = 2 \rightarrow n = -5$

$n+7 = -2 \rightarrow n = -9$

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

$|10n+1| = 99$

$10n+1 = 99$ $10n+1 = -99$

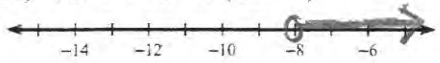
$10n = 98$ $10n = -100$

$n = \frac{98}{10} = \frac{49}{5}$ $n = -10$

both work!

Solve each inequality and graph its solution.

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



$102 > -3k - 8k + 14$

$88 > -11k$ switch

$-8 < k$

$k > -8$

Solve each compound inequality and graph its solution.

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

$5b \geq -15$ $\quad -2b > 12$

$b \geq -3$ $\quad b < -6$

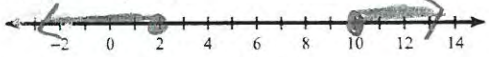
18) $8 - 9b \geq -28$ or $-7b - 2 \leq -37$

$-9b \geq -36$ $\quad -7b \leq -35$

$b \leq 4$ $\quad b \geq 5$

Solve each inequality and graph its solution.

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

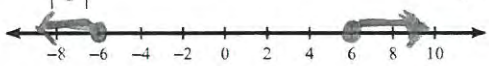


$K - 6 \geq 4$ $\quad K - 6 \leq -4$

$K \geq 10$ $\quad K \leq 2$

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

$\left|\frac{b}{6}\right| \geq 1$



$\frac{b}{6} \geq 1$ $\quad \frac{b}{6} \leq -1$

$b \geq 6$ $\quad b \leq -6$

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

$\frac{N}{2a^2} = \frac{2a^2b}{2a^2}$

$b = \frac{N}{2a^2}$

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

$-u \quad -u$

$-4u - w = 5w$

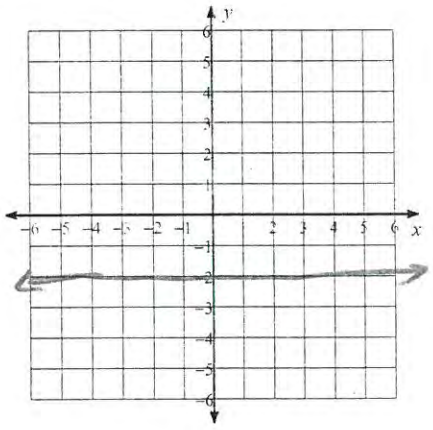
$+w \quad +w$

$\frac{-4u}{-4} = \frac{6w}{-4}$

$u = \frac{-3}{2}w$

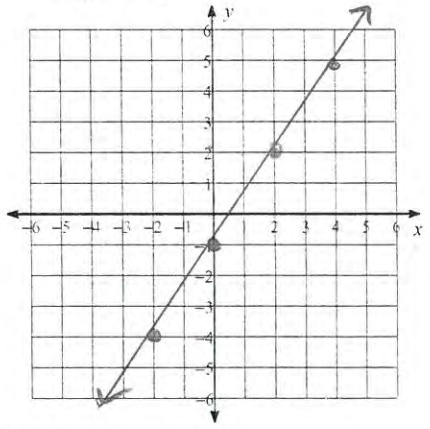
Sketch the graph of each line.

23) $y = -2$

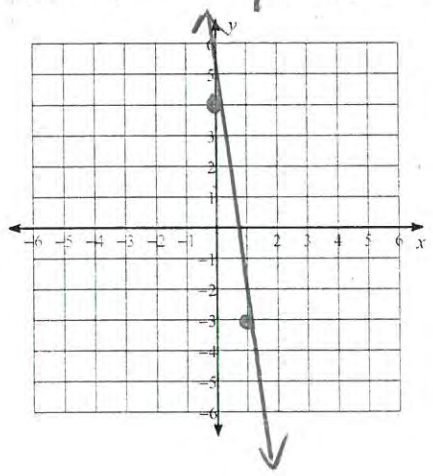


24) $y = \frac{3}{2}x - 1$

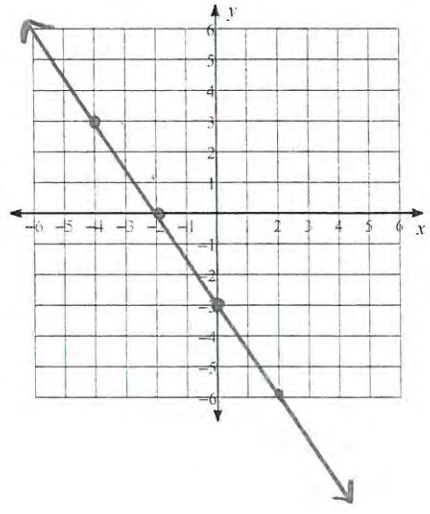
m $\quad b$



25) $7x + y = 4$ $\quad y = -7x + 4$



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



x	y
0	-3
-2	0

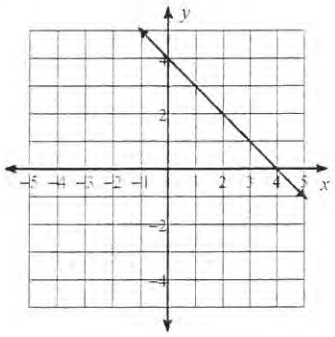
or $3x + 2y = -6$

$2y = -3x - 6$

$y = \frac{-3}{2}x - 3$

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

27)



$b = 4$
$m = -1$
$y = -1x + 4$ or $y = -x + 4$

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

28) Slope = 4, y-intercept = 3 $y = 4x + 3$

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

29) $x + y = -7$
$y = -x - 7$

30) $4x + 3y = 3$
$-4x \quad -4x$
$\frac{3y}{3} = \frac{-4}{3}x + \frac{3}{3} \rightarrow y = -\frac{4}{3}x + 1$

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

Use $y - y_1 = m(x - x_1)$

31) through: $(\overset{x_1}{-5}, \overset{y_1}{-5})$, slope = $\frac{2}{5}$

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

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

$y - 0 = 1(x - 1)$
$y = x - 1$

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

Find slope
use pt.
slope

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

$m = \frac{5-3}{3-3} = \frac{2}{0} \rightarrow$ undefined
vertical line $x = $ —
$x = 3$

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

$m = \frac{0-(-1)}{-1-4} = \frac{1}{-5}$

$y - 0 = -\frac{1}{5}(x + 1)$
$y = -\frac{1}{5}x - \frac{1}{5}$

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

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

$m = 3$

$y - 2 = 3(x - 2)$

$y - 2 = 3x - 6$

$y = 3x - 4$

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

$m = \frac{5}{4}$

$y - 5 = \frac{5}{4}(x - 4)$

$y - 5 = \frac{5}{4}x - 5$

$y = \frac{5}{4}x$

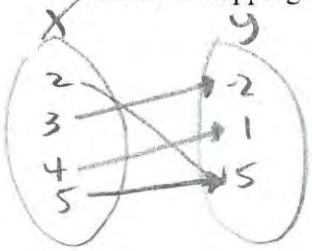
37) Given $\{(2,5), (3,-2), (4, 1), (5, 5)\}$

Is this a function? yes no x repeats

List the domain: $\{2, 3, 4, 5\}$

List the Range: $\{-2, 1, 5\}$

Make a mapping diagram.

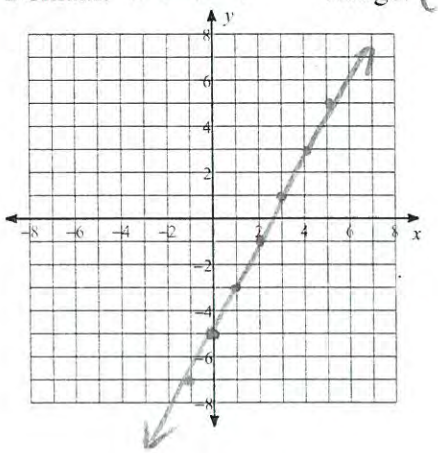


38) Graph $y = 2x - 5$

m b

Is this a function?

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$



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

$\{(3,1), (3,6), (4,1)\}$ $x = 3$ repeats to two different y values

Evaluate each function.

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

$k(-4) = 4(-4) - 4 = -20$

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

$g(9) = 9^2 + 4 = 81 + 4 = 85$

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

$f(3a) = 4(3a) + 3 = 12a + 3$

43) Find the slope between the points.

a) (4, -1) and (-7,5)

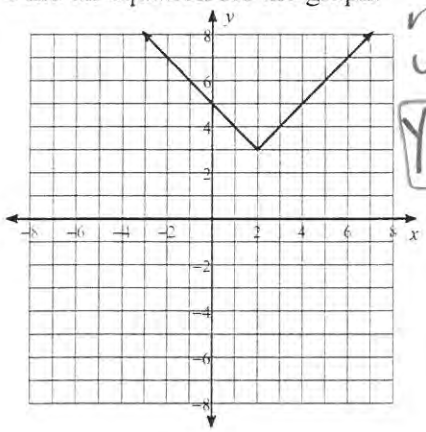
$m = \frac{5 - (-1)}{-7 - 4} = \frac{6}{-11}$

b) (3, 7) and (3, 1)

$m = \frac{1 - 7}{3 - 3}$ undefined

$y = a|x-h| + k$ — $-h$ is horiz. left–right; k is vert. up–down

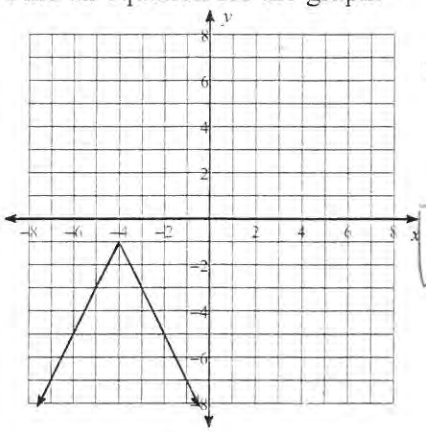
44) Find an equation for the graph.



right 2, $m = \pm 1$, up 3

$y = 1|x-2|+3$

45) Find an equation for the graph.



upside down, left 4, down 1, $m = -2$

$y = -2|x+4|-1$

Solve each system by elimination.

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

$-12x + 12y = 24$

$-10x - 12y = 20$

$-22x = 44$

$x = -2$

$-3(-2) + 3y = 6$

$3y = 0$

$y = 0$

$(-2, 0)$

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

$15x - 90y = -45$

$-15x + 90y = 45$

$0 = 0$

all solutions on the line

$5x - 30y = -15$

$-30y = -5x - 15$

$y = \frac{1}{6}x + \frac{1}{2}$

Solve each system by substitution.

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

$x - 6y = -13$

$x = 6y - 13$

$-6(6y - 13) + 7y = 20$

$-36y + 78 + 7y = 20$

$-29y = -58$

$y = 2$

$x = -1$

$(-1, 2)$

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

$-4x - 4y = -16$

$-x = -3y - 20$

$x = 3y + 20$

$-4(3y + 20) - 4y = -16$

$-12y - 80 - 4y = -16$

$-16y = 64$

$y = -4$ $x = 8$

$(8, -4)$

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.

adult: \$5, st.: \$13

x = adult tix \$, y = st. tix

$14x + 7y = 161$

$11x + y = 68$

$y = 68 - 11x$

$14x + 7(68 - 11x) = 161$

$14x + 476 - 77x = 161$

$-63x = -315$

$x = 5$ $y = 13$

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.

let yx = number

$x + y = 11$ (9)

$10x + y = 10y + x - 45$

$9x - 9y = -45$

$9x + 9y = 99$

$18x = 54$ $x = 3$ $y = 8$

83

Solve each system.

52) $-5x + 3y - z = -22$

$-6x + y + 4z = -29$

$x + y + z = -2$

see scratch paper at end

$(3, -3, -2)$

53) $2r - 2s - t = 3$

$r - 2s - 5t = 23$

$-6r + 3s + 5t = -22$

$(0, 1, -5)$

Solve each equation by taking square roots.

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

$6k^2 = 600$

$\sqrt{k^2} = \sqrt{100}$

$k = \pm 10$

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

$7x^2 = -18$

$\sqrt{x^2} = \sqrt{-18}/7$

$\sqrt{-18} = \sqrt{-1} \cdot \sqrt{9}\sqrt{2}$

$3i\sqrt{2}$

$x = \pm \frac{3\sqrt{2}i}{\sqrt{7}} = \frac{3\sqrt{14}i}{7}$

Solve each equation by factoring.

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

$r^2 - 5r - 14 = 0$

$(r-7)(r+2) = 0$

$r = 7 \quad r = -2$

57) $n^2 - 64 = 0$

$(n+8)(n-8) = 0$

$n = 8 \quad n = -8$

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

$5x^2 + 4x - 12 = 0$

$5x^2 + 10x - 6x - 12$

$5x(x+2) - 6(x+2)$

$(5x-6)(x+2) = 0$

$x = 6/5 \quad x = -2$

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

$3n^2 + 13n + 4 = 0$

$3n^2 + 12n + n + 4$

$3n(n+4) + 1(n+4)$

$(3n+1)(n+4) = 0$

$n = -1/3 \quad n = -4$

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

$6b^2 + 3b - 3 = 0$

$3(2b^2 + b - 1) = 0$

$3(2b-1)(b+1) = 0$

$b = 1/2 \quad b = -1$

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

$12m^2 + 12m + 3 = 0$

$3(4m^2 + 4m + 1) = 0$

$4m^2 + 2m + 2m + 1$

$3(2m+1)(2m+1) = 0$

$m = -1/2$

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

62) $y^2 + 11y + \_\_\_$ $121/4$ or 30.25

$\left(\frac{b}{2}\right)^2$

$\left(\frac{11}{2}\right)^2$

$(y + 11/2)^2$ or $(y + 5.5)^2$

Solve each equation by completing the square.

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

$\left(\frac{-18}{2}\right)^2$

$k^2 - 18k + 81 = 15 + 81$

$(k-9)^2 = 96$

$k - 9 = \pm\sqrt{96}$

$k = \pm\sqrt{96} + 9$

$k = \pm 4\sqrt{6} + 9$

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

$6n^2 + 12n = 18 \quad \div 6$

$n^2 + 2n = 3$

$n^2 + 2n + 1 = 3 + 1$

$(n+1)^2 = 4$

$n + 1 = \pm 2$

$n = 2 - 1 \quad n = -2 - 1$

$n = 1 \quad n = -3$

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

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

$b^2 - 4ac$

$-5x^2 - 2x - 8 = 0$

$a = -5 \quad b = -2 \quad c = -8$

$(-2)^2 - 4(-5)(-8)$

$4 - 160$

-156 2 imaginary

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

$9x^2 - 10x + 6 = 0$

$a \quad b \quad c$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$100 - 4(9)(6)$

$100 - 216 = -116$

2 imag.

Solve each equation with the quadratic formula.

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

$12x^2 - 5x + 6 = 0$

$a \quad b \quad c$

$x = \frac{5 \pm \sqrt{-263}}{24} = \frac{5 \pm i\sqrt{263}}{24}$

$25 - 4(12)(6)$

$25 - 288$

-263

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

$12x^2 + 12x - 8 = 0$

$x = \frac{-12 \pm \sqrt{528}}{24}$

$x = \frac{-12 \pm 4\sqrt{33}}{24} = \frac{-3 \pm \sqrt{33}}{6}$

$12^2 - 4(12)(-8)$

$144 + 384$

528

$\sqrt{528}$

$\sqrt{4} \cdot \sqrt{132}$

$\sqrt{4} \cdot \sqrt{4} \cdot \sqrt{33}$

$2 \cdot 2\sqrt{33}$

$4\sqrt{33}$

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

$x = -b/2a \quad x = 6/4 = 3/2$ axis $x = 3/2$

$2(3/2)^2 - 6(3/2) + 1$

$2(9/4) - 9 + 1$

$9/2 - 9 + 1 = 9/2 - 18/2 + 2/2$

$= -7/2$

vertex $(3/2, -7/2)$

Write a quadratic function that has the given zeros.

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

$x = 1 \quad x = 5/4$

$x - 1 = 0 \quad 4x = 5$

$4x - 5 = 0$

$(x-1)(4x-5) = y$

$4x^2 - 5x - 4x + 5 = y$

$y = 4x^2 - 9x + 5$

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

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

$(\frac{-10}{2})^2 = 25$

$y + 56 = x^2 - 10x$

$y + 56 + 25 = x^2 - 10x + 25$ → $y + 81 = (x-5)^2$

$y = (x-5)^2 - 81$

V: (5, -81)

axis: $x = 5$

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?

$410 = -16t^2 - 4t + 412$

$0 = -16t^2 - 4t + 2$

$t = \frac{4 \pm \sqrt{16 - 4(-16)(2)}}{-32} = \frac{4 \pm \sqrt{144}}{-32}$

$\frac{4+12}{-32}$ $\frac{4-12}{-32}$ $t = -\frac{1}{2}$ $t = \frac{1}{4}$

Simplify.

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

$0 - 3i = -3i$

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

$3 + 7i + 4 - 2i = 7 + 5i$

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

$-30 - 18i + 35i + 21i^2$ $i^2 = -1$

$-30 + 17i - 21 = -51 + 17i$

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

$16 - 20i - 20i + 25i^2$ → -25

$16 - 40i - 25$

$-9 - 40i$

77) $\frac{9}{-4 + 6i} \cdot \frac{-4 - 6i}{-4 - 6i}$ → $\frac{-36 - 54i}{52}$ → $\frac{-18 - 27i}{26}$

$16 - 24i + 24i - 36i^2$

78) $\frac{7i}{10 - 10i} \cdot \frac{10 + 10i}{(10 + 10i)}$ → $\frac{70i + 70i^2}{100 - 100i + 100i - 100i^2}$

→ $\frac{-70 + 70i}{200}$ → $\frac{-7 + 7i}{20}$

79) $\sqrt{-64}$

$8i$

80) $\sqrt{-54}$ $\sqrt{9} \cdot \sqrt{6} \sqrt{-1}$

$3\sqrt{6}i$

Simplify. Your answer should contain only positive exponents.

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

$4x^6y^{-3}$ → $\frac{4x^6}{y^3}$

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

$y^{-4}x^{-4}y^{-12}$ → $x^{-4}y^{-16}$ → $\frac{1}{x^4y^{16}}$

83) $\frac{x^2y^3}{x^2y^4}$ $\frac{1}{y}$

y^{-1}

84) $\frac{x^{-2}y^{-4}}{(x^4y^3)^4}$ $\frac{x^{-2}y^{-4}}{x^{16}y^{12}}$ → $x^{-18}y^{-16}$ → $\frac{1}{x^{18}y^{16}}$

85) $\left(\frac{m^{-3}n^{-3} \cdot mn}{mn^3}\right)^4$ → $\frac{m^{-12}n^{-12}m^4n^4}{m^4n^{12}}$ → $\frac{m^{-12}n^{-8}}{n^{12}}$

→ $m^{-12}n^{-20}$ → $\frac{1}{m^{12}n^{20}}$

86) $\frac{(2vu^3)^4}{((2uv^0)^4 \cdot 2u^{-1}v^{-3})^2}$ $\frac{2^4v^4u^{12}}{2^8u^82^2u^{-2}v^{-6}}$ → $\frac{2^4u^{12}v^4}{2^{10}u^6v^{-6}}$

→ $2^{-6}u^6v^{10}$ → $\frac{u^6v^{10}}{2^6}$ → $\frac{u^6v^{10}}{64}$

Name each polynomial by degree and number of terms.

87) $9x^6$ 6th degree monomial

88) $8n^5$ Quintic 5th degree monomial

Simplify each expression.

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

$2p^4 + 4p^3 + 7p^2 + 6p$

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

$3x^4 + 4x^2 + 9x$

Find each product.

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

	$3x$	8
$4x^2$	$12x^3$	$32x^2$
$-x$	$-3x^2$	$-8x$
-2	$-6x$	-16

$12x^3+29x^2-14x-16$

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

	$8x$	-4
x^2	$8x^3$	$-4x^2$
$5x$	$40x^2$	$-20x$
2	$16x$	-8

$8x^3+36x^2-4x-8$

Divide. Use synthetic division once and long division once.

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

9 | 1 −9 1 0
9 0 9
1 0 1 9 ← R

$x^2+0x+1+\frac{9}{x-9}$

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

$v^2-2v+6+\frac{-10}{v+9}$

$v+9 \overline{)\, v^3+7v^2-12v+44}$

$-2v+6$

$-(v^3+9v^2)$

$-2v^2-12v$

$-(-2v^2-18v)$

$6v+44$

$-(6v+54)$

-10

Factor each completely.

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

$x^2(2x-7) \quad -1(2x-7)$

$(x^2-1)(2x-7) \rightarrow (x+1)(x-1)(2x-7)$

96) $2u^3+250$

$2(u^3+125) \qquad u, 5$

$2(u+5)(u^2-5u+25)$

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

$6(x^4+5x^2-50) \rightarrow 6(x^2+10)(x^2-5)$

Describe the end behavior of each function.

98) $f(x)=-x^4+3x^2+x-2$ - even ↓↓

L $x \rightarrow -\infty$ $f(x) \rightarrow -\infty$

R $x \rightarrow \infty$ $f(x) \rightarrow -\infty$

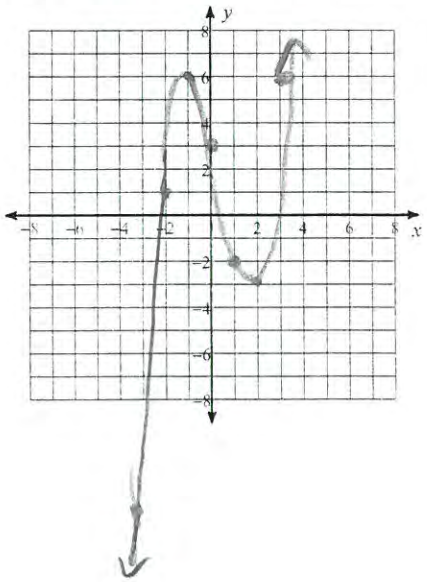
99) $f(x)=-x^5+3x^3-2x+2$ - odd ↘↙

L $x \rightarrow -\infty$ $f(x) \rightarrow \infty$

R $x \rightarrow \infty$ $f(x) \rightarrow -\infty$

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



x	y
-3	-18
-2	1
-1	6
0	3
1	-2
2	-3
3	6

3 zeroes (x intercepts)

$x=-2.1$ ish

$x=.5$ ish

Turn points

max ~ $(-1,6)$

min ~ $(2,-3)$

Graphs.

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

$x = \frac{+4}{2} = 2$

axis $x = 2$

$y = 4 - 8 - 12 = -16$

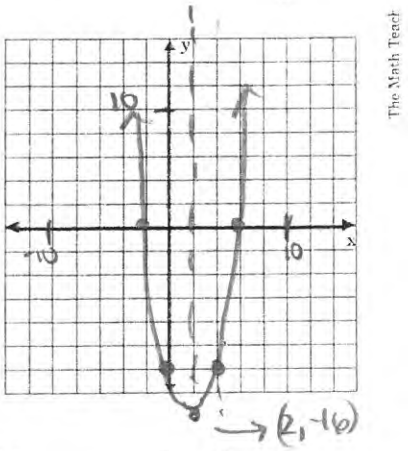
V: (2, -16)

$y = 0 - 0 - 12$

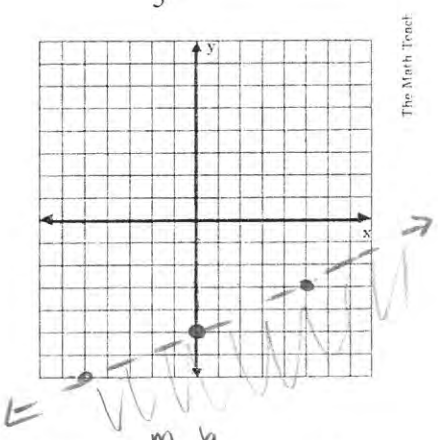
$y = -12$

$0 = (x-6)(x+2)$

$x = 6 \quad x = -2$

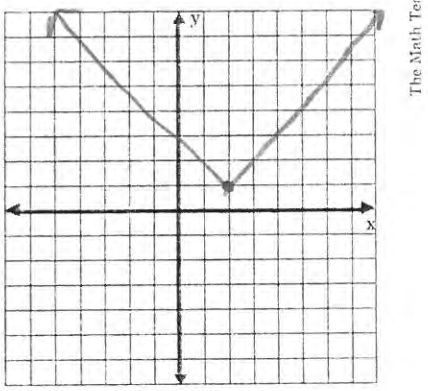


102. $y < \frac{2}{5}x - 5$



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

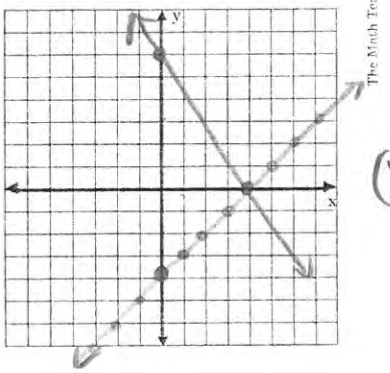
right 2 up 1



104. $3x + 2y = 12$

$y = \frac{m}{x} - 4$

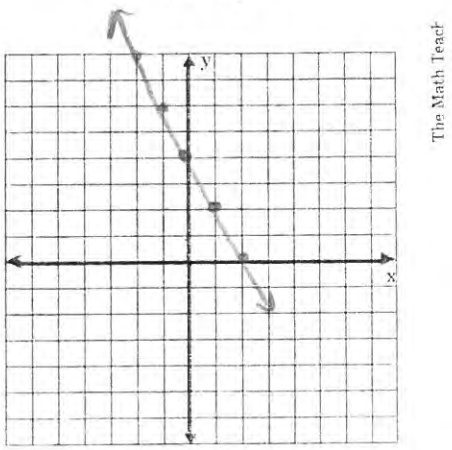
x	y
0	6
4	0



(4, 0)

105. $y = -2x + 4$

m b



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

h k

V: (2, 4)

axis $x = 2$

$y = -3(0-2)^2 + 4$

$y = -3(4) + 4$

$= -8$

$0 = -3(x-2)^2 + 4$

$-4 = -3(x-2)^2$

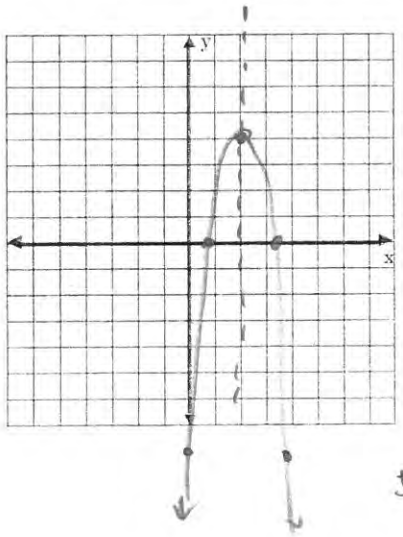
$\frac{4}{3} = (x-2)^2$

$\pm\sqrt{4/3} = x - 2$

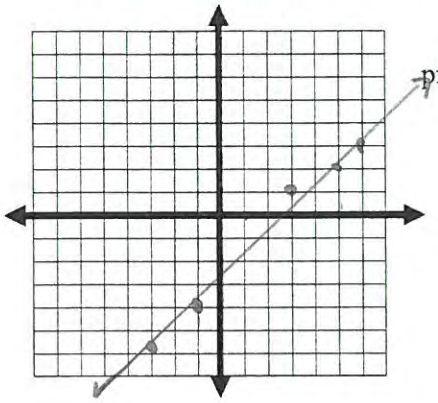
$\pm 1.15 \quad x = \pm 1.15 + 2$

$x = 3.15$

$x = .85$



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.

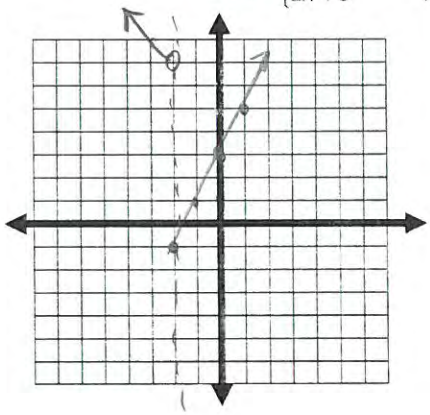
$m = \frac{-4-2}{-1-5} = \frac{-6}{-6} = 1$

$y - 2 = 1(x-5)$

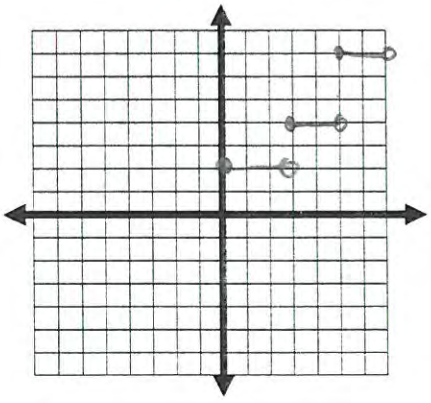
$y = x - 3$

at $x=7$ $\boxed{y = 7-3=4}$

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



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



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

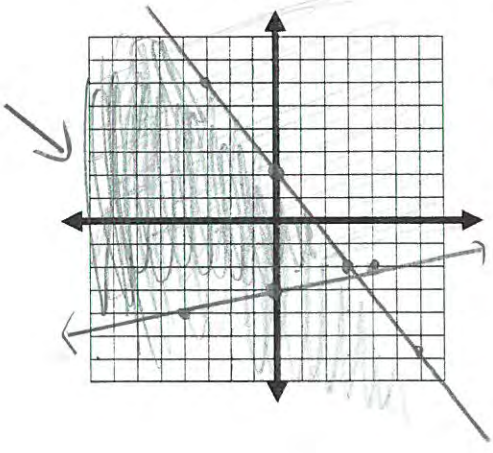
$3y \leq -4x+6$

$y \leq -\frac{4}{3}x+2$

$x-4y \leq 12$

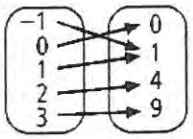
$-4y \leq -x+12$

$y \geq \frac{x}{4}-3$



Semester 1 Review Algebra 2 Name:_____

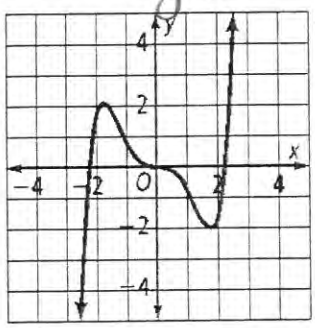
111. Determine whether each relation is a function.



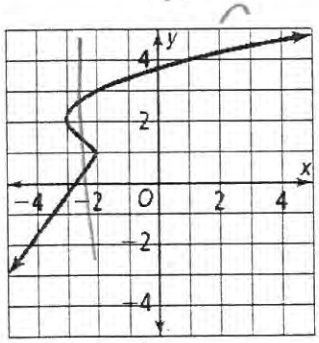
yes no x repeats
each x goes to one y value

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

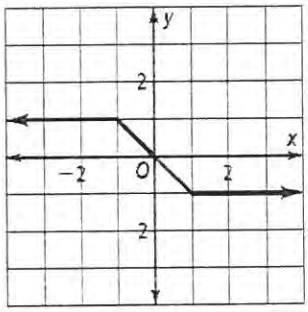
yes



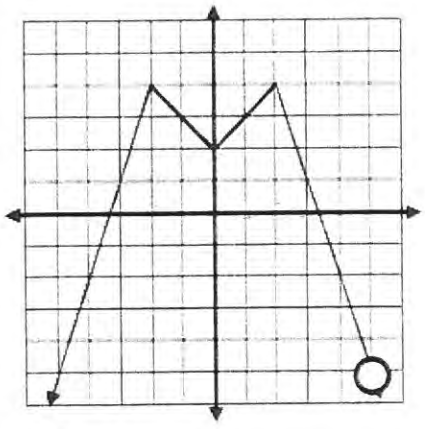
no !!



yes.



113. Given the graph. Find the following.



Relative maximum: $(-2,4)$ $(2,4)$
Relative minimum: $(0,2)$
Domain: $(-\infty,5)$ Range: $(-\infty,4]$
X intercepts: $(-10/3,0)$ $(14/3,0)$ Y intercepts: $(0,2)$
Avg rate of change from x=-2 to x=4
$(-2,4)$ $(4,-2)$ $\frac{-2-4}{4-(-2)} = \frac{-6}{6} = -1$
Increasing/ decreasing intervals:
f(0)= 2 f(3)= 1

inc: $(-\infty,-2)$ $(0,2)$
Dec: $(-2,0)$ $(2,5)$

$(-2,4)$ $(-3,1)$
$y-1=3(x+3)$
$y-1=3x+9$
$y=3x+10$
$0=3x+10$
$-10=3x$
$-10/3=x$

#52. ① $-5x+3y-z=-22$
② $-6x+y+4z=-29$
③ $x+y+z=-2$

① $-5x+3y-z=-22$
③ $x+y+z=-2$
$-4x+4y=-24$

① mult. by 4
$-20x+12y-4z=-88$
② $-6x+y+4z=-29$
$-26x+13y=-117$

$-4x+4y=-24 \rightarrow \div 4 \quad -x+y=-6$
$-26x+13y=-117 \quad -26x+13y=-117$

$\xrightarrow{\cdot -13}$ $13x-13y=78$
$-26x+13y=-117$
$-13x=-39$
$\boxed{x=3}$

$-x+y=-6$
$-3+y=-6$
$\boxed{y=-3}$

$x+y+z=-2$
$3+-3+z=-2$
$\boxed{z=-2}$

$(3,-3,-2)$

54. $2r-2s-t=3$ ①
$r-2s-5t=23$ ②
$-6r+3s+5t=-22$ ③

② $r-2s-5t=23$
③ $-6r+3s+5t=-22$
$-5r+s=1$

(1)·5
$10r-10s-5t=15$
$-6r+3s+5t=-22$
$4r-7s=-7$

$-5r+s=1 \xrightarrow{\cdot 7} -35r+7s=7$
$4r-7s=-7$
$31r=0$
$\boxed{r=0}$

$-5r+s=1$
$\boxed{s=1}$

$2(0)-2(1)-t=3$
$-2-t=3$
$-t=5 \quad t=-5$

$(0,1,-5)$