Pre-Calculus 11 Review Package

Chapter 1 Sequences and Series

$t_n = t_1 + (n-1)d \quad S_n = \frac{n}{2}(2t_1 + (n-1)d) \quad S_n = \frac{n}{2}(t_1 + t_n) \quad t_n = t_1 r^{n-1} \quad S_n = \frac{t_1(r^n - 1)}{r-1}, r \neq 1, \quad S\infty = \frac{t_1}{1-r}$

1. In the arithmetic sequence 5, 3, 1, -1, …, the 17th term is:

A. 19 B. 37 C. -42 D. -27 E. none of the above

2. In the geometric sequence 81, -27, …, the 7th term is:

A. $-\frac{1}{9}$ B. $\frac{1}{9}$ C. $\frac{1}{27}$ D. $-\frac{1}{27}$ E. 531441

3. In the arithmetic sequence -1.5, 2, 5.5, 9…, the common difference is:

A. 4/3 B. -4/3 C. -3.5 D. 3.5 E. none of the above

4. In the geometric sequence 18, -9, 4.5, …, the value of the common ratio is:

A. -2 B. -27 C. 2 D. -1/2 E. none of the above

5. In the geometric series, 1, ½, ¼, …, the sum of the first five terms is:

A. 15/8 B. 1/15 C. ½ D. 1/64 E. $\frac{31}{16}$

6. Given $t_1 = 5$ and $d = -2$, write the first four terms of the arithmetic sequence.

7. The first term of an arithmetic sequence is 6 and the fourth term is 33. Determine the second and third terms.

8. Determine the sum for the arithmetic series given $t_1 = 7, t_n = 79, n = 8$

9. Determine two geometric means between 2 and -54.

10. Write the general term, t_n , for the geometric sequence given $t_3 = 5$ and $t_6 = 135$.

11. Determine the sum of the geometric series: 27 + 9 + 3, + … + 1/243.

12. The infinite series given by $(1)+(3x)+(9x^2)+(27x^3)+...$ has a sum of 4. Determine the value of x and list the first four terms.

13. For what values of x will the infinite geometric series, $1+\frac{x}{3}+\frac{x^2}{9}+\frac{x^3}{27}+...$, be:

a) convergent?
b) divergent?

14. Express $0.\overline{43}\overline{7}$ as an infinite geometric series and determine the sum of the series if possible.

15. If $x+2, 2x+1, 4x-3$ are three consecutive terms of a geometric sequence, determine the value of the common ratio and the three given terms.

16. The sum of the first n terms of an arithmetic series is given by $S_n = 2n^2 + 5n$.

a) Determine the first three terms of this series.
b) Determine the sum of the first ten terms of the series using the given formula.

17. Determine the sum of all the multiple of 4 between 1 and 999.

18. The color of clothing fades over time. Suppose a pair of jeans fades by 3% with each washing.

a) What percent of color remains after 8 washings?
b) If $t_1 = 100$, what are the first four terms of the sequence?
c) What is the value of r for the sequence?

19. The fifth and eighth terms of an arithmetic series are -41 and -74 respectively. Determine the sum of the first 40 terms in the series.

20. The sum of the first five terms in an arithmetic series is 80. The sum of the first six terms is 111. Determine the first four terms in the series.

21. Determine the position of the given term to complete the statement:
97 is the ____th term of -3, 1, 5,…

22. In an arithmetic series, $t_1 = -6, t_n = 21, S_n = 75$. Determine the number of terms in the series.

23. A ball is dropped from a height of 10m. On each rebound, it rebounds to 60% of the previous height. Find a) the height of the 7^{th} rebound
b) the total distance travelled up to the moment it reaches the top of the 7^{th} rebound.
c) the total distance travelled if the ball bounces forever

Chapter 2 Trigonometry Review

1. What is the reference angle of 242 degrees?
   a. 242
   b. 48
   c. 118
   d. 62

2. What is the angle in standard position if it is in the second quadrant and has a reference angle of 42 degrees?
   a. 42
   b. 132
   c. 138
   d. 318

3. If the Point P on the terminal arm is (2,-5), find the exact value of $\sin\theta$?
   a. $\frac{5}{\sqrt{29}}$ b. $\frac{-5}{\sqrt{29}}$ c. $\frac{2}{\sqrt{29}}$ d $\frac{-2}{\sqrt{29}}$

4. If the Point P on the terminal arm of angle θ is (-1,4), what is the reference angle to the nearest degree?
   a. 76
   b. 104
   c. 256
   d. 284

5. Find the exact value of sin 315
   a $\frac{-1}{\sqrt{2}}$ b. $\frac{-\sqrt{3}}{2}$ c. $\frac{\sqrt{3}}{2}$ d. $-\sqrt{3}$

6. If $\tan\theta = \frac{-6}{7}$ and angle θ lies in Quadrant four, find the value of θ

7. If $\tan\theta = \frac{-3}{5}$ and angle θ lies in Quadrant 2, find the **exact** value of sin θ

8. In triangle PQM $\angle$P = 71º, $\angle$Q = 27º and side PM=11. What is the length of side QM?

9. In triangle PQM $\angle P = 71^\circ$, $\angle Q = 27^\circ$ and side PQ=11. What is the length of side PM?

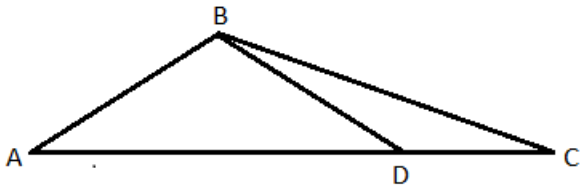
10. In triangle CDE, $\angle C = 43^\circ$, CD= 6 and DE=8. Find $\angle E$

11. In triangle ABC, AB=5, BC=7 and AC = 9 Find $\angle A$.

12. In triangle DEF, DF=5, DE=7 and $\angle D=27^\circ$. Find EF.

Use the following info and diagram for the rest of the questions

If AB = BD = 4, CB=5 and $\angle BCD=27^\circ$,



13. Find $\angle BDA$
14. Find $\angle BAD$
15. Find $\angle ABC$
16. Find $\angle CBD$
17. Find length DC
18. Find length AC

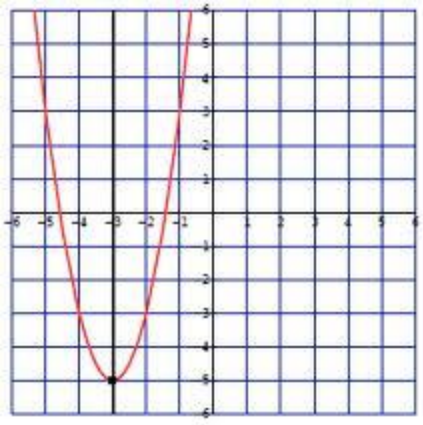
Chapter 3: Quadratic Functions

1. The coordinates of the vertex in the quadratic function $y = 2(x-3)^2 + 4$ are:

A. (-3, 4) B. (3, -4) C. (3, 4) D. (2, 3) E. none of the above

2. The minimum value of the function below is:

A. -5.5 B. -5 C. -0.5 D. unknown E. -3



3. The point (-3, 9) is on the graph of $y = x^2$. What happens to the point if the graph is translated 2 units right and 3 units down and then reflected across the y-axis?

A. (1, 6) B. (-1, 9) C. (-1, 6) D. (5, 9) E. (5, 6)

4. The value of 'c' that makes $y = 4x^2 - 6x + c$ a perfect trinomial square is:

A. $\frac{3}{2}$ B. $-\frac{3}{2}$ C. $\frac{9}{4}$ D. $-\frac{9}{4}$ E. None of the above

5. The function $y = -2x^2 + 8x - 3$ has:

A. A minimum value of 5 B. A max value of -3 C. A max value of -11 D. A max value of 5

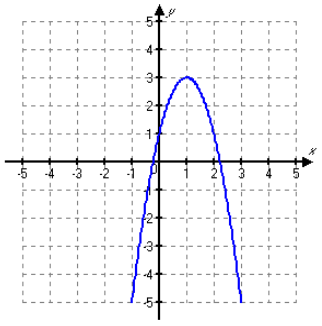
6. The path of a basketball shot can be modeled by the function $h(d) = -0.09d^2 + 0.9d + 2$ where h is the height of the ball in meters and d is the horizontal distance of the ball from the player in meters.

a) What is the maximum height reached by the ball?
b) What is the horizontal distance of the ball from the player when it reaches its maximum height?
c) How far from the floor is the ball when the player initially releases it?

7. Write the function $y = -x^2 - \frac{2}{3}x - \frac{1}{2}$ in the form $y = a(x-p)^2 + q$ by completing the square. Do not convert to decimals.

8. For the function $y = 3x^2 - 12x - 6$ determine the following algebraically. Use a graphing calculator to check your work:
a) The domain and range of the function.
b) the minimum value of the function and when it occurs.
c) the exact values of the x and y intercepts as ordered pairs.

9. Determine the equation of the graph pictured below in $y = a(x-p)^2 + q$ form.



10. Write the quadratic function $y = 6x^2 + 24x + 17$ in the form $y = a(x-p)^2 + q$.

11. Determine a quadratic function in vertex form that has the given characteristics: vertex (2, 5), passing through point (4, -11).

12. The point (4, 16) is on the graph of $f(x) = x^2$. Describe what happens to the point when the following sets of transformations is performed in the order listed:
a) a horizontal translation 5 units to the left and then a vertical translations 8 units up.
b) a reflection in the x-axis followed by a horizontal translation of 10 units to the right.
c) a vertical expansion by scale factor 3 followed by a horizontal translation 2 units left.

13. Tickets for a theatre performance currently sell for $17. At this price , 500 tickets sell. It is estimated that for every $2 increase in price, 10 fewer tickets will be sold. Determine the price that will result in the maximum revenue and determine the maximum revenue.

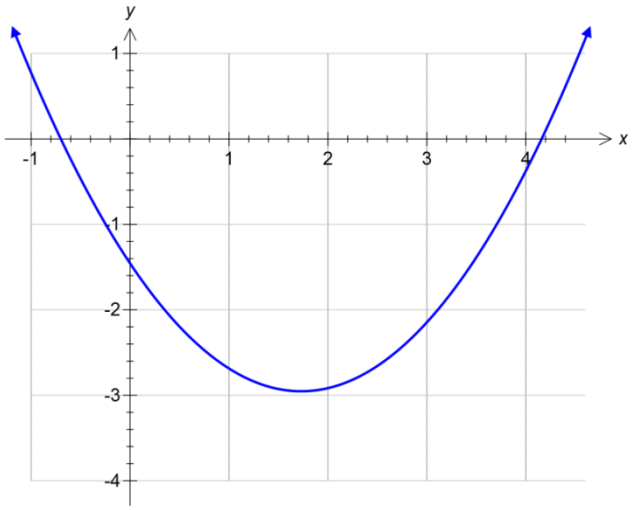
14. Bob has 120m of fencing. He is planning to build a rectangular enclosure for his cows. He will build the enclosure alongside his barn and will fence in the remaining three sides. Determine the dimensions that will result in the maximum area.

15. Two numbers have a difference of 13 and a product that is a minimum. Determine the two numbers and the minimum product.

16. Express $y = 3(x-2)^2 + 1$ each in the form $y = ax^2 + bx + c$ where a, b, and c are integers:

Chapter 4 Quadratic Equations

1. The graph of a quadratic equation is shown below. To the **nearest tenth**, what are the x-intercepts?



   a. -0.7, 4.1
   b. -1.3, 4.1
   c. -0.7, 4.2
   d. -1.3, 4.2
   e. None of these

2. Which of the following are the factors of $4x^2 - 24x + 27$?
   a. $(2x + 9)(2x + 3)$

b. $(2x-9)(2x-3)$

c. $(4x-3)(x-9)$

d. $(4x-9)(x-3)$

e. None of these

3. What value of *K* completes the square for $2x^2+12x+K$?

a. 9

b. 18

c. 36

d. 144

e. None of these

4. For what value(s) of *k* does $y=kx^2-12x-6$ have **No Real roots**.

a. $k=-6$

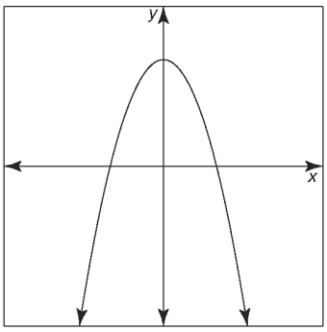
b. $k=6$

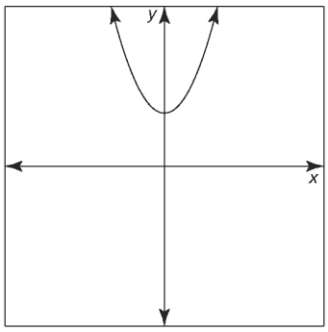
c. $k>-6$

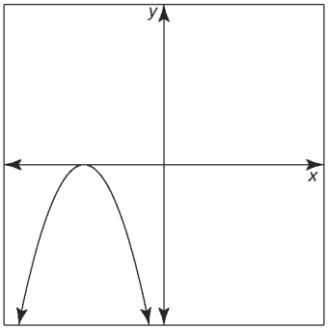
d. $k<-6$

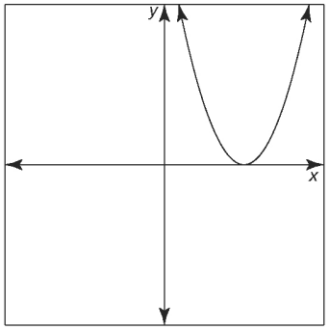
e. It doesn't matter what *k* is, this equation always has no real roots.

5. Which graph represents a quadratic function that has two distinct real roots?

a. 

b. 

c. 

d. 

6. Write a quadratic equation that satisfies the following conditions:
   a. A parabola that opens downwards and has zeros at $x = 4$, and -5

   _____

   b. A parabola that opens upwards and has two equal roots at $x = -6$

   _____

7. Solve by Factoring:
   a. $x^2 - 6x - 7 = 0$

   b. $10x^2 - 45x = -20$

8. Solve by Completing the Square. Leave answers in simplest Radical form:
   a. $x^2 - 5x + 3 = 0$

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

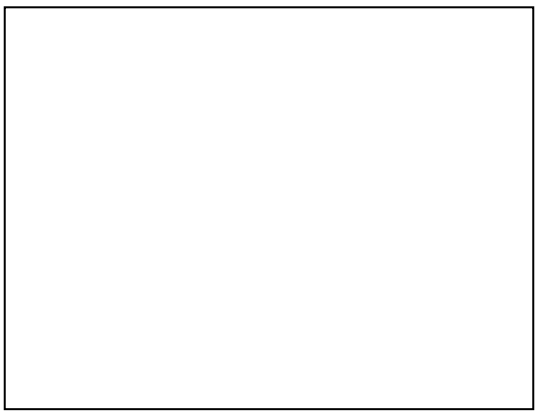
9. Solve the equation $3x^2 - 21x = 294$ by using the **Quadratic Formula**.

10. Two numbers have a sum of 22. What are the numbers if they also have a product of 96?

11. The length and width of a rectangle are 7m and 5m respectively. When each dimension is increased by the same amount, the area is tripled. Find the dimensions of the new rectangle, to the nearest tenth of a metre.

12. The height, *h(t)* metres, of a flare as a function of the time, *t* seconds, since the flare was fired from a boat is given by the function $h(t) = -5.25(t-4)^2 + 86$

    a. Use your calculator to graph the function, and show it below using **reasonable** window settings.



$Y_1=$

[,] [,]

    b. What was the maximum height of the flare?

_____

    c. What was the height of the flare when it was fired?

_____

    d. How many seconds after it was fired did the flare hit the water? (to the nearest second.)

_____

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13. The side of one cube is 2cm more than the side of another cube. The volumes of the cubes differ by $152cm^3$. Find the lengths of the sides of each cube.

14. A right triangle has one side that is 7cm longer than its shortest side. The hypotenuse is 8cm longer than the shortest side. What are the dimensions of the triangle?

15. A signed photograph of Trevor Linden measures 30cm by 20cm. It is put into a frame such that there is a border of uniform width around the photo. Together, the photo and the border have an area of 816cm^2. What is the width of the border?

16. Find the base and height of a right triangle if the area is 18 square centimeters and the height is five more than the base.

17. Use a quadratic equation to find two consecutive even integers if their product is 168.

Chapter 5: Radical Expressions and Equations

1. Which mixed radical is equivalent to $\sqrt{832a^5b}$ in **simplest** form?
   a. $8a^2\sqrt{13ab}$
   b. $64a^2\sqrt{13ab}$
   c. $2a^2\sqrt{208ab}$
   d. $4a^2\sqrt{52ab}$

2. Which expression represents $3a^2b\sqrt{6}$ written as an entire radical?
   a. $\sqrt{18a^4b^2}$
   b. $\sqrt{54a^4b^2}$
   c. $\sqrt{18a^2b}$
   d. $\sqrt{54a^2b}$

3. What is the sum of $\sqrt{72}+\sqrt{50}-\sqrt{18}$?
   a. $8\sqrt{2}$

b. $\sqrt{104}$

c. $14\sqrt{2}$

d. $\sqrt{140}$

4. Which expression represents $\left(\sqrt{3}-5\right)^2$ when it is expanded and written in simplified form?

a. -16

b. 34

c. $18\sqrt{3}$

d. $28-10\sqrt{3}$

5. Sam rationalized the denominator of a radical expression. Did he make an error, and if so, in what step?

$\frac{\sqrt{7}}{\sqrt{2}}$	Step 1
$=\frac{\sqrt{7}}{\sqrt{2}}\times\frac{\sqrt{2}}{\sqrt{2}}$	Step 2
$=\frac{\sqrt{14}}{\sqrt{4}}$	Step 3
$=\frac{\sqrt{14}}{2}$	Step 4

a. Step 2 has an error

b. Step 3 has an error

c. Step 4 has an error

d. There are no errors, his answer is correct.

6. Simplify each of the following:

a. $\sqrt{72}$

b. $\sqrt[3]{32}$

c. $\sqrt[3]{270m^5n^6}$

7. Write the expression $7\sqrt{2}-\left(\sqrt{27}+2\sqrt{8}-3\sqrt{12}\right)$ in its simplest form.

8. The city of Prince George has an area of 318.26km^2. If the city were laid out in a perfect square, what would its perimeter be to the nearest tenth of a km?

9. Expand and Simplify: $\left(3\sqrt{2}+5\right)^2$

10. What is the quotient of $\dfrac{3+\sqrt{5}}{2-\sqrt{5}}$ in simplest form?

11. Solve for *x*. Check your solutions.

    a. $4+\sqrt{4+x^2}=x+12$

    b. $\sqrt{5x+1}-\sqrt{3x-5}=2$

12. Two adjacent sides of a rectangle have measures of $\sqrt{8r+9}$ cm and 2r cm. Determine the actual lengths of the sides, if the perimeter of the rectangle is 54cm.

13. The velocity, *V*, in feet per second of a liquid flowing from a spout at the bottom of a tank is given by the formula $V = 7\sqrt{d}$, where *d* is the depth in feet of the liquid in the tank. How deep, to the nearest tenth of a foot, is the liquid if the velocity of the outflow is 40 feet/sec?

14. The total surface area of a cone with base radius *r* and height *h* is given by the formula $A = \pi r\left(r + \sqrt{r^2 + h^2}\right)$. Solve this formula for *h*.

Chapter 6 – Rational Expressions and Equations

1. Determine the non-permissible value(s) for this expression.

$$\frac{m+1}{m^2+5m+6}$$

a) 1, 2, 3 b) -1, -2, -3 c) 2, 3 d) -2, -3

2. Determine the non-permissible value(s) for this expression.

$$\frac{x^2+8x+16}{(x-3)(x+5)} \div \frac{3x^2-3}{(x+4)}.$$

a) 3, -5, 1, , -4, 4 b) 3, -5, 1, -1, -4 c) 0, 5, 1, -1, -4 d) -3, -5, 1, -1, 4

3. Simplify. $\dfrac{\dfrac{x}{x-3}}{4-\dfrac{x}{x-3}}$

a) $\dfrac{x}{3x-12}$ b) $\dfrac{x}{3(x-3)}$ c) $\dfrac{3}{x-4}$ d) $\dfrac{x}{3x+12}$

4. Solve.

$$\frac{x}{x-2} + \frac{2}{x+2} = 1$$

a) 1 b) 0 c) 2 d) -2

5. The sum of two integers is 12. The difference between their reciprocals is $\frac{2}{9}$. Determine the two integers.

a) 3 and 9 b) -6 and 18 c) 3 and 9 or -6 and 18 d) 3 and 18

6. Simplify the rational expression, and state any non-permissible values.

$$\frac{25(x-5)(x+1)}{10(2x+1)(x-5)}$$

7. Divide. Express the quotient in simplest factored form, and state the non-permissibles.

$$\frac{2(x+3)(x-3)}{3x} \div x(x-3)$$

8. A rectangle has an area of $2x^2 - x - 1$.

a) Determine an expression for the width of the rectangle if the length is $2x + 1$.

b) State the domain.

9. Simplify, and state the non-permissible values.

$$\frac{x+1}{xy^2} + \frac{4}{7xy} - \frac{x-3}{5y^2}$$

10. Solve and check each equation.

$$\frac{x}{3} = \frac{2}{x} + \frac{x+1}{3}$$

11. Solve.

$$\frac{x-2}{x} = \frac{2-x}{x+1}$$

12. Simplify the expression, and identify any non-permissible values.

$$\frac{15x^3 + 5x^2}{6x^2 - 13x - 5}$$

13. Simplify.

$$\frac{x^2-144}{12x^2} \div \left(\frac{x^2-x-6}{x^2-2x}\right)\left(\frac{x^2+4x+4}{x^2+10x-24}\right)$$

14. Simplify, and state the non-permissible values.

$$\frac{2x}{x-3} - \frac{3(x+1)(x-6)}{3x^2+6x-45} + \frac{4}{x+5}$$

15. Solve the equation. Round your answers to the nearest hundredth.

$$\frac{x-5}{2x+10} - \frac{8}{x^2-25} = \frac{x}{x-5}$$

16. John's family travels 300 km from their home to a family reunion. His cousin Susan and her family take the same amount of time to travel 200 km from their home. Determine the speed of both vehicles given that one of the vehicles travels 30 km/h faster than the other.

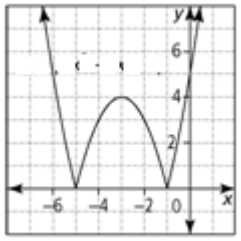
Chapter 7 - Absolute Value and Rational Functions

1. Evaluate.

$(| 3^2 - 4^2 |)^2$

a. -49 b. 25 c. 49 d. -49

2. What is the function whose graph is shown?



a. $y = | -x^2 - 6x - 5|$ b. $y = | -x^2 + 6x - 5|$ c. $y = | -x^2 - 6x + 5|$ d. $y = | x^2 + 6x - 5|$

3. Solve.

$| x - 3 | + 1 = 0$

a. -4 b. 4 c. 2 d. No solution

4. Given the equation $| x^2 - 4 | = 4$, determine the number of solutions.

a) There is one solution only. **b)** There are two solutions.

c) There are three solutions. **d)** There are four solutions.

5. What are the *x*-intercepts and *y*-intercepts, if any.

$$g(x) = \frac{1}{x^2 + 7x + 12}$$

a. (0 , 0) and (0 , 1/12) b. (0 , 1/12) c. (-3 , 0) and (-4 , 0) d. (0 , 0)

6. Evaluate the expression.

$5(|-2|) + |-3|$

7. Solve.

$|2n| = 3n - 8$

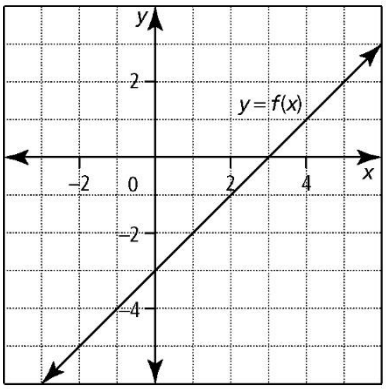
8. Determine whether $x = 2$ is a solution to this equation.

$|x + 2| - 3 = -4x^2 + 8x + 5$

9. State the equation(s) of the vertical asymptote(s) for this function.

$$h(x) = \frac{1}{2x^2 + 2x - 24}$$

10. Consider the graph of $y = f(x)$, and sketch the graph of the reciprocal function, $y = \frac{1}{f(x)}$.



11. Order the set of numbers from least to greatest.

$$\left|-\frac{6}{5}\right|, -\left|\frac{6}{10}\right|, \left|-\frac{6}{15}\right|, \left|-\frac{6}{20}\right|, \left|\frac{6}{25}\right|$$

12. Express the function as a piecewise function.

$y = |\, 2(x + 2)^2 - 8 \,|$

13. Solve. Give the exact answers.

$3 = |\, -4x^2 - 8x \,|$

14. Find the exact values of the solutions.

$0 = |\, x^2 - 2x - 3 \,| - 4$

15. Sketch the graph of $y = f(x)$ and the graph of $y = \frac{1}{f(x)}$ on the same set of axes. Label the asymptotes, the invariant points, and any intercepts.

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

Chapter 8 : Solving systems of equations

1 The sum of two integers is –7.

When 10 times the larger number is subtracted from the square of the smaller number, the result is 61. Which system of equations could be used to determine the two integers?

A $x + 7 = -y$
$x^2 - 10y = 61$

B $x + 7 = y$
$y^2 - 10x = 61$

C $x + y = -7$
$x^2 - 61 = -10y$

D $x + y = 7$
$x^2 - 10y = 61$

2 What is the solution to the following linear-quadratic system of equations?

$$y = 3x - 3$$
$$y = -x^2 + 4x - 1$$

A {(–1, 3), (2, –6)}

B (2, 3)

C (–1, 2)

D {(–1, –6), (2, 3)}

3 How many real number solutions exist for the following quadratic-quadratic system of equations?

$$y = -2x^2 + 2x - 7$$
$$y = x^2 - 3x + 1$$

A zero
B one
C two
D an infinite number

4 What is the solution to the following system of equations:

$$y=(x+2)^2-2$$
$$2y=(x+2)^2$$

A No solution
B $x=2$
C $x=-4$ and $x=2$
D $x=-4$ and $x=0$

5 What is the solution set to the following system of equations?

$$x^2 - 4x - y = 0$$
$$x - y - 4 = 0$$

A { (1, -3), (0, 4)}
B {(3, 1), (0, -4)}
C {(-3, 1), (4,0)}
D {(1, -3), (4,0)}

Full response

6. Solve the following system of equations graphically:

$$4x-y+3=0$$
$$2x^2+8x-y+3=0$$

7. Solve the following system of equations algebraically

$$3x^2-x-y-2=0$$
$$6x^2+4x-y=4$$

8. A student determines that one solution to a system of quadratic equations is ***(2, 1).*** What is the value of *n* if the equations are:

$4x^2 - my = 10$
$mx^2 + ny = 20$

9. Solve the following system graphically, giving your answers to the nearest tenth.

$3x+y=4$
$y=x^2-3x-1$

10 Verify that ***(5,7)*** is a solution to the following system:

$k+p = 12$
$4k^2-2p=86$

11 Solve the following system of equations using the method of substitution, and verify your solution

$y + 2x = x^2 - 6$
$x + y - 3 = 2x^2$

12 Solve the following system of equations by substitution and verify your solution.

$2x^2 - 4x + y = 3$
$4x - 2y = -7$

13 The hypotenuse of a right-angled triangle measures 17cm. the shortest side is 7cm shorter than the middle side. Define variables to represent the two shortest sides, express these conditions as equations, and solve the system, to find the lengths of the two shorter sides.

Chapter 9 : Linear and Quadratic Inequalities

1. Which of the ordered pairs **IS** a solution to the inequality $y > 2x - 7$?

a. (3,-2) b. (3,-1) c. (0,-8) d. (1,-4)

2. Which of the ordered pairs **IS NOT** a solution to the inequality $2x - 5y > 4$?

a. (-1,-2) b. (3,-1) c. (-2,-1) d. (1,-1)

3. Which value of x **IS** a solution to the inequality $-x^2 + 4x - 3 > 0$.

a. x=1 b. x=2 c. x=3 d. x=4

4. Which inequality has as its solution: $x < -1$ or $x > 4$

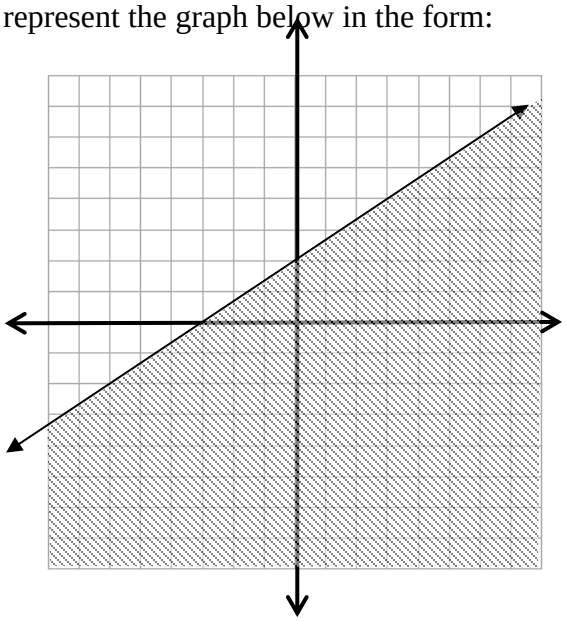
a. $-x^2 + 3x < -4$ b. $-x^2 + 3x > -4$ c. $x^2 - 3x < 4$ d. $x^2 < -3x + 4$

5. Which combinations of the ordered pairs A,B, and C **ARE** solutions to the inequality $y \le -\frac{1}{2}(x+3)^2 + 2$: A(-2,1), B(-5,-1), C (-1,0)

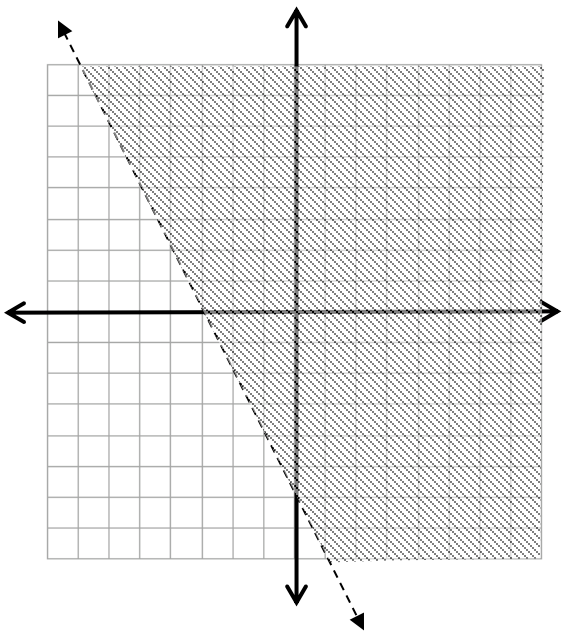
a. A,C b. A,B c. B,C d. A,B,C

Short Answer

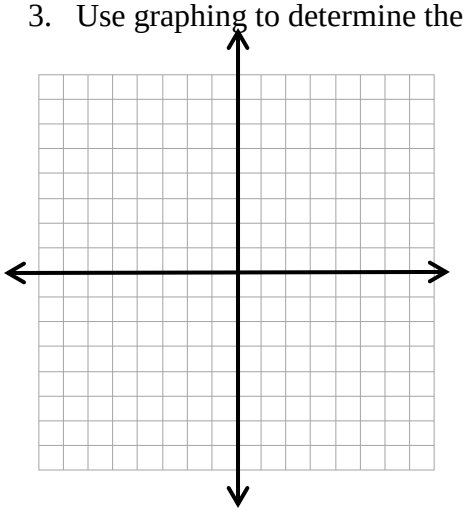
1. Write an **inequality** using $>, <, \le, or \ge$ to represent the graph below in the form:
   a. in the form $y = mx + b$
   b. in the form $Ax + By = C$



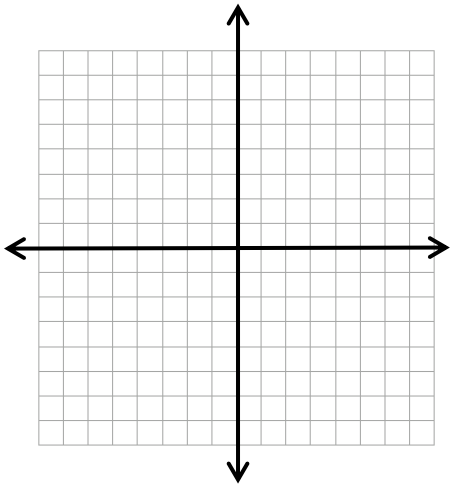
2 Write an **inequality** using $>, <, \le, or \ge$ to represent the graph below in the form:
   a. in the form $y = mx + b$
   b. in the form $Ax + By = C$



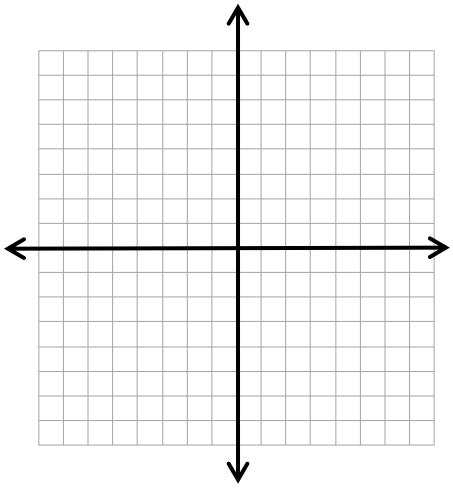
3. Use graphing to determine the solution to the inequality: $x(x-7) \leq 8$.



4. Graph the solution to the quadratic inequality: $y > x^2 + 5x - 6$



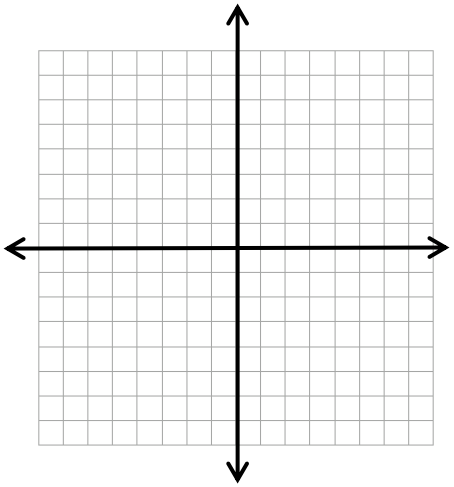
5. Graph the quadratic inequality using transformations to sketch the boundary parabola: $y \leq 2(x-3)^2 - 2$



Long Answer:

1. St. George's Golf Team has an annual budget of $100 that covers golf balls and tees. If it costs $15 for a package of golf balls and $10 for a package of tees:
    a. Determine a linear inequality that could represent this scenario.

    b. Graph the inequality on the grid provided. Ensure you label your axis and the equation accordingly.



    c. List the possible combinations of golf ball and tee packages that the Golf Team could afford that utilized their entire budget.

2. Use a non-graphical strategy to determine the solution to the inequality: $-2x(x-4) \leq -24$. Show all work for full marks.

3. Use a non-graphical strategy to determine the exact solution in simplest form to the inequality: $2x^2 - 6x \leq 9$. Show all work for full marks.

4. Irene at the Saints Café sits down to calculate her monthly profitability, P, with respect to the number of Breakfast Wraps she sells by the end of Break each morning, b. After extensive analysis, she concludes that the equation that best represents her profit is as follows:

   $P(b) = -2b^2 + 560b - 15000.$

   a. How many wraps must she sell in order to be profitable? (in whole number values only)

   b. How many wraps must she sell in order to make a profit of LESS THAN $16,000 per month, but still be profitable? (in whole number values only)

Answers:

Ch 1: Sequences and Series

1. D 2. B 3.D 4.D 5.E

6. 5, 3, 1, -1 7. 15 & 24 8. 344 9. -6, 18

10. $t_n = \frac{5}{9}(3)^{n-1}$ 11. $\frac{9841}{243}$ 12. $x = \frac{1}{4}$ $1, \frac{3}{4}, \frac{9}{16}, \frac{27}{64}$

13. a) $-3 < x < 3$ b) $x \le -3, x \ge 3$

14. $0.437 + 0.000437 + 0.000000437...$ The sum is $\frac{437}{999}$.

15. r = 5/3; 9, 15, 25 16. a) 7, 11, 15 b) $S_{10} = 2(10)^2 + 5(10) = 250$

17. 124500

18. a) 78.37% (actually looking for term 9 if term 1=100%)
b) 100, 97, 94.09, 91.2673… (see pg. 40 #10) c) r=0.97

19. -8460 20. 6, 11, 16, 21 21. 26th term 22. n=10

23a) 0.28m b) 38.88m c) 40m.

Solutions to Chapter 2 Trig Review

1. D 2. C 3. B 4. A 5. A 6. 319.40 7. $\frac{3}{\sqrt{34}}$ 8. 22.9

9. 5.04 10. 30.76° 11. 50.70° 12. 3.41 13. 34.58 14. 34.58

15. 118.42 16. 7.58 17. 1.16 18.7.75

Ch 3: Quadratic Functions

1.C 2.B 3.A 4.C 5.D

6.a) 4.25m b) 5 m c)2m 7. $y = -\left(x + \frac{1}{3}\right)^2 - \frac{7}{18}$

8. a. $x \in R, y \ge -18$ b)min val = -18, when x=2 c)x-int: $\left(2 \pm \sqrt{6}, 0\right)$ y-int: (0, -6)

9. $y = -2(x-1)^2 + 3$ 10. $y = 6(x+2)^2 - 7$

11. $y = -4(x-2)^2 + 5$ 12.a) (-1,24) b) (14, -16) c) (2, 48)

13. Ticket price $ 37.75 results in max. rev. $17111.25

14. Max area of 1800square meters when dimensions are 60m x 30m

15. Two numbers are -6.5 and 6.5 and min product is -42.25

16. $3x^2 - 12x + 13$

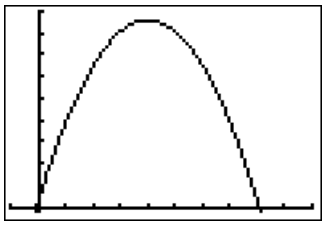
Ch 4: Quadratic Equations

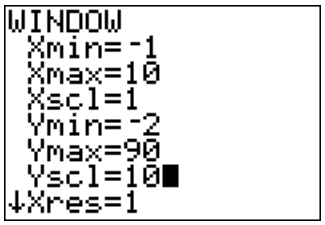
1. c
2. b
3. b
4. d
5. a
6. a) $y = -(x-4)(x+5)$

   b) $y = (x+6)^2$
7. a) $x = -1$, or 7

   b) $x = \frac{1}{2}$, or 4
8. a) $x = \frac{5 \pm \sqrt{13}}{2}$

   b) $x = \frac{9 \pm \sqrt{97}}{4}$
9. x = 14, or -7
10. The numbers are 6 and 16
11. The rectangle is 9.3m by 11.3m
12. a)

    b) 

    Max height is 86m

    c) Fired from height of 2m

    d) Approx. 8 seconds
13. The cubes have side lengths of 4cm and 6cm
14. The side lengths are 5cm, 12cm, and 13cm
15. The border around the photo is 2cm wide
16. Base is 4 and height is 9.
17. 12,14

Math 11 Review

Chapter 5 Radicals
Answers:

1. a
2. b
3. a
4. d
5. d

6. a) $6\sqrt{2}$

   b) $2\sqrt[3]{4}$

   c) $3mn^2\sqrt[3]{10m^2}$

7. $3\sqrt{2}+3\sqrt{3}$

8. 71.4km

9. $43+30\sqrt{2}$

10. $-11-5\sqrt{5}$

11. a) $x = -3.75$

    b) $x = 7$ or 3

12. Rectangle is 9cm by 18cm

13. $d \doteq 32.7$ feet

14. $h=\sqrt{\frac{A^2}{\pi^2 r^2}-\frac{2A}{\pi}}$

Chapter 6 – Rational Expressions and Equations – Answers

1. d

2. b

3. a

4. b

5. c

6. $\frac{5(x+1)}{2(2x+1)}$, $x \neq \frac{-1}{2}$, 5

7. $\frac{2(x+3)}{3x^2}$, $x \neq 0, 3$

8. a) The width is $x - 1$. **b)** $x > 1$

9. $\frac{56x+35+20y-7x^2}{35xy^2}$, $x \neq 0$, $y \neq 0$

10. -6

11. x = -½, 2

12. $\frac{5x^2}{2x-5}$, $x \neq \frac{-1}{3}$, $\frac{5}{2}$

13. $\frac{(x+2)(x-12)}{12x(x-3)}$, $x \neq$ -2, 2, -12 as well as the obvious NPV's given the final expression.

14. $\frac{x^2+19x-6}{(x-3)(x+5)}$, $x \neq -5,3$

15. x = -20.44, 0.44

16. 60 km/h and 90 km/h

Chapter 7 – Absolute Value and Rational Functions - Answers

1. c

2. a

3. d

4. c

5. b

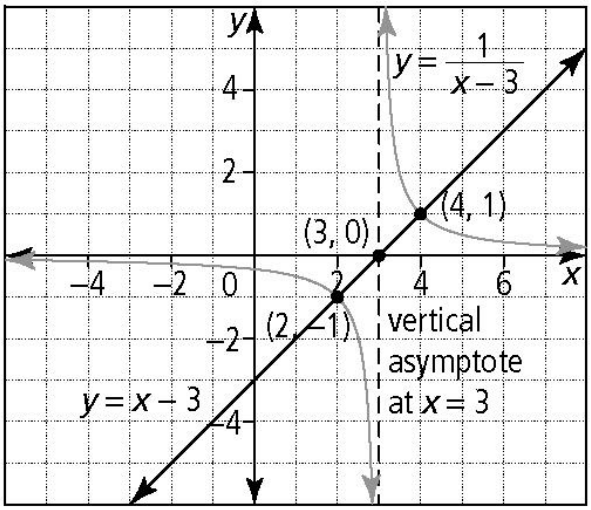
6. 13

7. $n = 8$ only

8. It is not.

9. $x = -4$, $x = 3$

10.



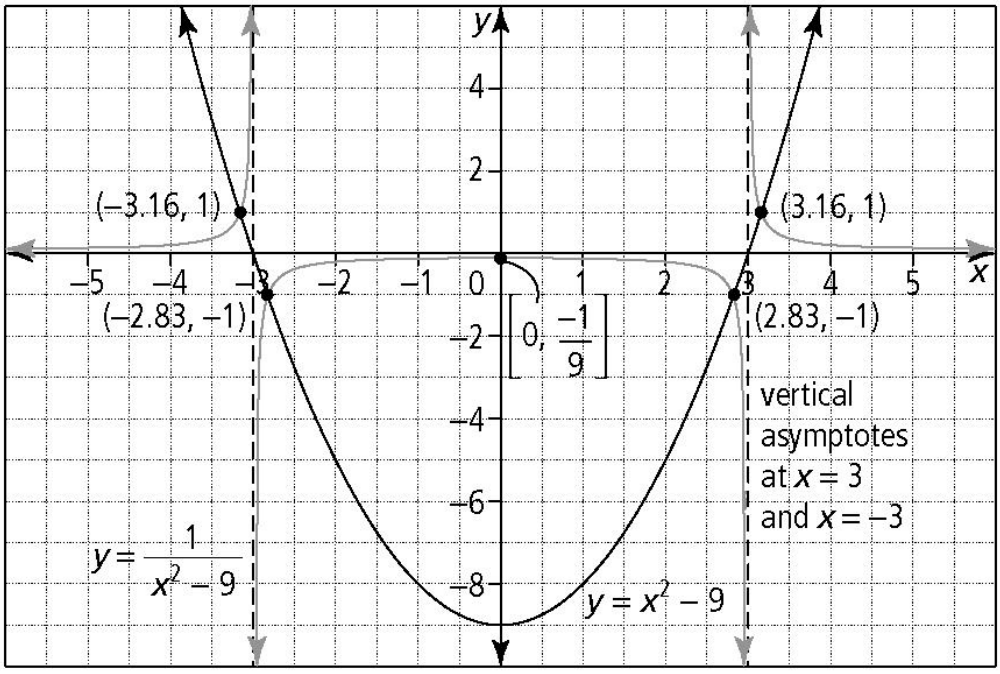
11. $-\left|\frac{6}{10}\right|, \left|\frac{6}{25}\right|, \left|-\frac{6}{20}\right|, \left|-\frac{6}{15}\right|, \left|-\frac{6}{5}\right|$

12. $y = \begin{cases} 2(x+2)^2 - 8, \text{ if } x \le -4 \text{ or } x \ge 0 \\ -2(x+2)^2 + 8, \text{ if } -4 < x < 0 \end{cases}$

13. $x = -1 \pm \frac{\sqrt{7}}{2}$, $x = -\frac{1}{2}$ and $x = -\frac{3}{2}$

14. $x = 1 \pm 2\sqrt{2}$ and $x = 1$

15.



Chapter 8 Systems of Equations Answers

1	A	2	D	3	A	4	D	5	D
6	(-2, -5) and (0, 3)	7	(1/3, -2) and (-2, 12)	8	*n = -4*				

9 (2.2, -2.7) and (-2.2, 10.7) 10 It **is** a solution. 11 No Solution 12 (0.5, 4.5)

13 $a = b-7$ *(or* $a - b+7$*);* $a^2+b^2=17^2$ The sides are of lengths 8cm and 15cm.

Ch 9 : Linear and Quadratic Inequalities

MC. 1.d 2.c 3.b 4.a 5.d

SA.

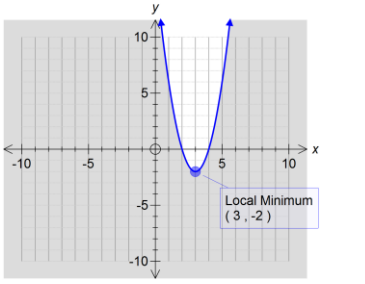
1. a. $y \le \frac{2}{3}x + 2$ b. $2x - 3y \ge -6$

2. a. $y > -2x - 6$ b. $2x + y > -6$

3. $-1 \le x \le 8$

4.

5.

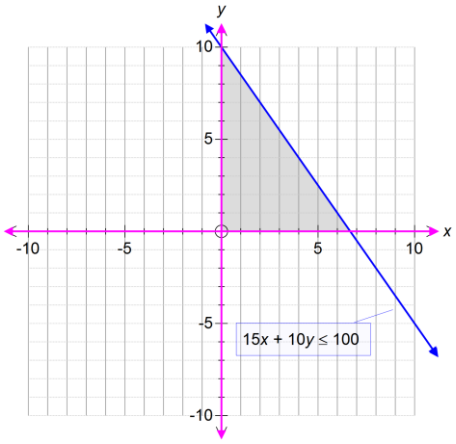


Math 11 Review

LA.

1a. If x=# golf ball packages and y=# tee packages, $15x + 10y \le 100$, $x \ge 0$, $y \ge 0$

1b.



1c. If (x,y)=(#of golf ball packages,# tee packages): (0,10), (2,7), (4,4), (6,1)

2. $x \le -2$ or $x \ge 6$ 3. $\frac{3-3\sqrt{3}}{2} \le x \le \frac{3+3\sqrt{3}}{2}$, methods may vary

4a. She must sell between 30 and 250 breakfast wraps, not-inclusive ($31 \le b \le 249$).

b. She must sell $31 \le b \le 75$ or $205 \le b \le 249$) to profit less than $16,000 per month