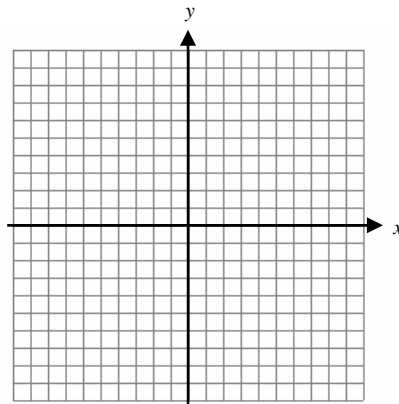


Algebra 2
Second Semester Review

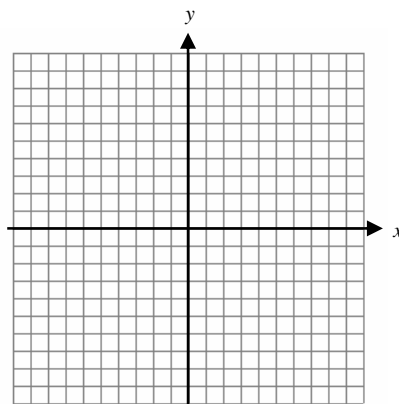
Name _____

Non-Calculator

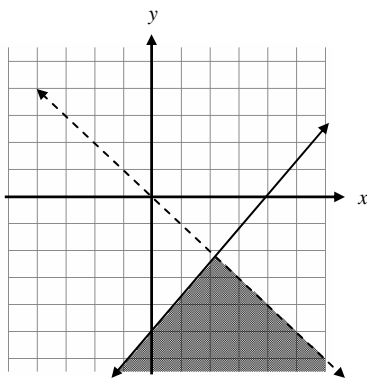
7.4 1. Graph: $x - 2y < -2$



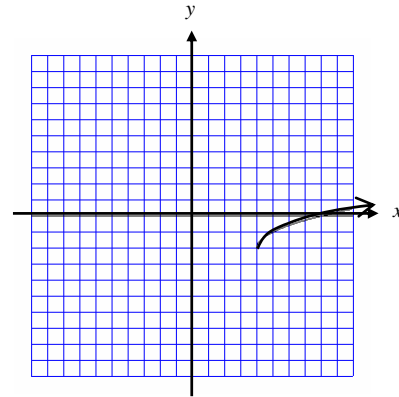
7.5 2. Graph: $4x + 3y > 12$
 $x \geq y$
 $x \leq 7$



7.5 3. Write the system of inequalities defining the shaded region.



8.1 4. Which function matches the graph?



a) $f(x) = \sqrt{x+4} + 2$

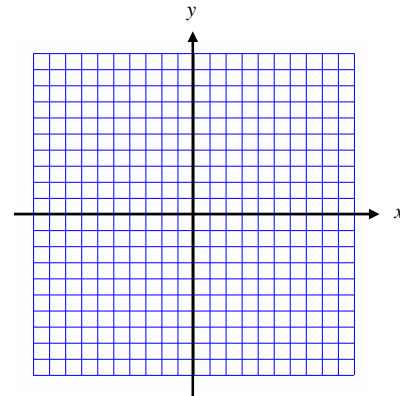
c) $f(x) = \sqrt{x+4} - 2$

b) $f(x) = \sqrt{x-4} - 2$

d) $f(x) = \sqrt{x-4} + 2$

8.1 5. State the domain and range of $y = \sqrt{x} + 3$

8.1 6. Graph : $y = -\sqrt{x} - 5$



8.2 7. Simplify if the domain is the set of all complex numbers.

(a) $\sqrt[3]{\frac{250}{8}}$

(b) $\sqrt{-64}$

8.4 8. Find the complex conjugate: $4 + 3i$

8.4 9. Use complex conjugates to write the quotient in $a + bi$ form: $\frac{8 + 5i}{5 + 3i}$

8.4 10. Simplify: $(-4 - 4i) + (-9 + 8i)$

9.3 11. Describe the end behavior of the function:

(a) $f(x) = -4x^6 - 3x^5 + 2x - 1$

(b) $f(x) = 4x^3 - 2x^2 - 5x + 3$

15.2 12. Convert each angle measure from radians to degrees.

(a) $\frac{5\pi}{3}$

(b) 3π

(c) $-\frac{3\pi}{4}$

13. Convert each angle measure from degrees to radians.

(a) 45°

(b) -270°

(c) 225°

(d) -60°

14.3 14. Sketch each angle and identify the quadrant the terminal side of each angle is in. Then find the reference angle in degree measure.

(a) 125°

(b) -60°

(c) 225°

(d) -315°

15. Sketch each angle and identify the quadrant the terminal side of each angle is in. Then find the reference angle in radian measure.

(a) $-\frac{5\pi}{6}$

(b) $\frac{3\pi}{5}$

(c) $\frac{-7\pi}{4}$

(d) $\frac{23\pi}{12}$

Graphing Calculator

In questions 1 and 2, use a graphing calculator to solve each system. (The graphs of the equations may intersect more than once.)

7.1 1. $y = 3(2)^x$
 $y = 9 - 5x$

2. $y = x^2 - 1$
 $y = 3x$

In questions 3 - 5, solve each system algebraically.

7.1 3. $x - 4y = 4$
 $y = x + 2$

7.2-3 4. $2x - 4y = -1$
 $x + 4y = -2$

7.2-3 5. $2x - 4y = -4$
 $4x - 8y = -2$

6.5 6. Make a box plot of the data in the table below and identify:

Bushels of Corn Per Acre

Farm A	150.4
Farm B	118.4
Farm C	120.6
Farm D	135.7
Farm E	139.1
Farm F	164.3
Farm G	134.2
Farm H	138.1
Farm I	119.5
Farm J	150.0

Box plot:

- median
- mean
- minimum
- maximum
- lower quartile(1st)
- upper quartile(3rd)
- the range
- the interquartile range
- any outliers(if exist)

- 6.4 7. The daily high temperature readings (in °F) in Kent during the first two weeks of May are given below.

{70, 76, 80, 80, 76, 63, 47, 68, 38, 73, 54, 58, 70, 66}

Complete the table below and make (a) an absolute frequency histogram and (b) a relative frequency histogram for the temperature.

Interval	Tally	Frequency	Relative Frequency
30-39			
40-49			
50-59			
60-69			
70-79			
80-89			

(a) *absolute frequency histogram*

(b) *relative frequency histogram*

- 8.2 8. Simplify the expression. Assume $x \geq 0$: $\sqrt[3]{54x^4}$

- 8.2 For questions 9 - 11, solve. Check to eliminate extraneous solutions.

9. $\sqrt{2x+6} = 4$

10. $\sqrt[3]{5x-7} + 11 = 8$

11. Multiple choice: $\sqrt{x+7} = x-13$

(a) 18, 9

(b) No real number solution

(c) 9

(d) 18

8.2 12. Express using fractional exponents : $\sqrt[3]{h^2}$

9.1 13. Add: $(3x^2 + 3x + 5) + (-2x^2 + 4x + 2)$

9.1 14. Subtract: $(7x^3 - 4x) - (-6x - 5 + 5x^3)$

9.2 15. Multiply: $(x - 1)(x^2 - 3x - 5)$

9.2 For questions 16 and 17, divide.

16.
$$\frac{-3x^4 - 7x^3 + 12x^2 + 7x + 3}{x^2 + 3x - 1}$$

17. Multiple Choice:
$$\frac{2y^2 - 2y + 2}{y + 2}$$

(a) $3y + 6 + \frac{10}{y + 2}$

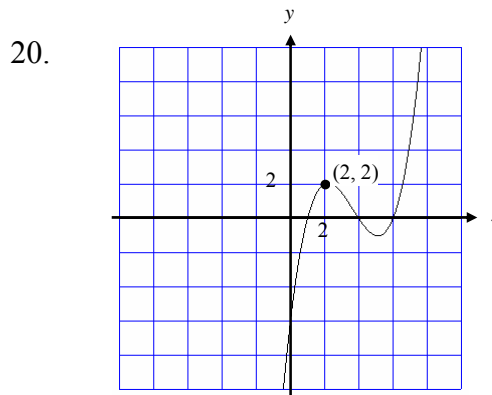
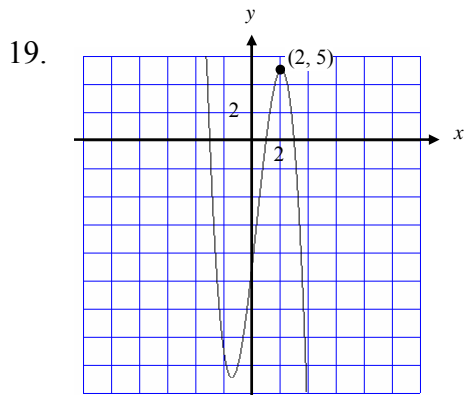
(b) $2y - 6 + \frac{-14}{y + 2}$

(c) $2y + 2 + \frac{8}{y + 2}$

(d) $2y - 6 + \frac{14}{y + 2}$

9.4 18. Given: $f(x) = x^3 - 4x^2 - x + 4$. Find all real and/or imaginary zeros of the function.

9.4 For questions 19 and 20, find an equation for the cubic function whose graph is given.



9.6 For questions 21 and 22, tell whether y varies inversely with x . If so, write an equation giving y as a function of x .

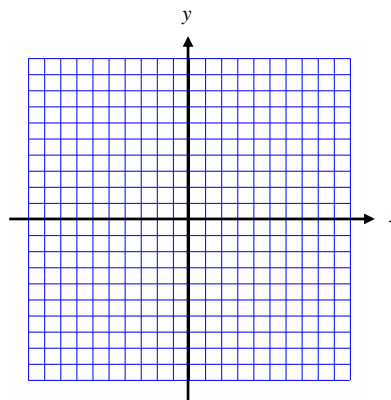
21.

x	3	8	-0.4
y	7	19	30

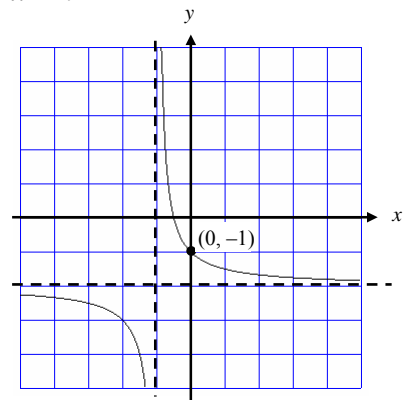
22.

x	5	4	-0.2
y	2	2.5	-50

9.7 23. Sketch a graph of $f(x) = \frac{x+2}{x+3}$. Include any vertical or horizontal asymptotes.



- 9.7 24. Find an equation of the hyperbola in the form $y = \frac{a}{x-h} + k$



- 9.9 For questions 25 and 26, solve the equation:

25. $\frac{x}{x+4} - \frac{1}{5} = -\frac{4}{x+4}$

26. $\frac{2}{x-10} + \frac{3x}{x-4} = 5$

- 12.3 27. To register at AAHS as a senior, you may choose from four math classes, five English classes, three social studies classes and four science classes. How many choices are there if you choose one of each subject?
- 12.3 28. Simplify: ${}_{15}P_3$
- 12.3 29. In how many ways can you arrange the letters in the word ALABAMA?
- 12.3 30. In how many ways can five pictures be arranged on a wall?

- 12.4 31. In how many ways can 3 students of a class of 15 art students and 4 students from a class of 33 music students be chosen to form a committee?

For questions 32 and 33, find the probability of choosing each type of card at random from a standard deck.

- 13.1 32. A red card or a black two.

- 13.1 33. A face card or a ten.

For questions 34 and 35, suppose a card is drawn at random from a standard deck of 52 playing cards. The card is placed back in the deck, and a card is again drawn at random. Find the probability of each event.

- 13.2 34. The first card is a club and the second card is a face card.

- 13.2 35. At least one of the two cards is a heart.

For questions 36 through 39, two cards are drawn at random from a standard deck of 52 playing cards. The first card is not returned to the deck before the second card is drawn. Find the probability of each event.

- 13.3 36. The first card is a ten and the second card is a ten

- 13.3 37. Neither card is a face card.

- 13.3 38. The second card is a heart, given that the first card is a spade.

- 13.3 39. The second card is a Jack, given that first card is a 9.

14.1 For questions 46 – 49, make a sketch of right $\triangle ABC$ with right angle at C . Find each missing angle and side of $\triangle ABC$.

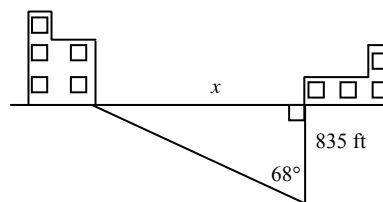
46. $\angle A = 28^\circ$, $b = 3$

47. $c = 110$, $b = 29.1$

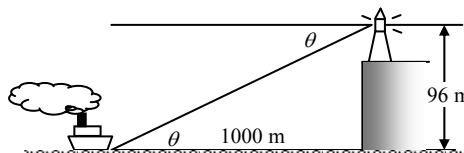
48. $\angle B = 56^\circ$, $c = 18.2$

49. $\tan A = \frac{2}{3}$

14.2 50. Two buildings are located as shown in the diagram. Find the distance between the buildings.



51. A ship traveling at sea passes a marker known to be 1000 m from a lighthouse on a cliff as measured along the water. If the observation point at the top of the lighthouse is 96 m above the sea, what is the angle of depression from the lighthouse to the ship?



14.3 For questions 52 – 55, sketch each point in a coordinate plane. An angle θ is in the standard position with the given point P on its terminal side. Find $\sin \theta$, $\cos \theta$, and $\tan \theta$.

52. $P(3, 4)$

53. $P(-3, 12)$

54. $P(-5, -12)$

55. $P(7, -24)$