**Unit 5**

1. Simplify.

a.

c.

2. Simplify.

a. b.

3. Solve.

a. b.

**Unit 6**

1. Simplify each expression that has a real root. If the expression does not represent **a real number**, say so.

a. b. c.

2. Simplify each radical.

a. b. c.

d. e. f.

3. Simplify. If no simplification is possible, say so

a. b.

c.

4. Simplify the following binomials.

a. b.

5. Circle the appropriate terms that correspond to each real number.

a. Rational or Irrational AND Terminating Decimal or Repeating Decimal or Non-repeating Decimal

b. Rational or Irrational AND Terminating Decimal or Repeating Decimal or Non-repeating Decimal

c. Rational or Irrational AND Terminating Decimal or Repeating Decimal or Non-repeating Decimal

6. Write the decimal as a common fraction **in lowest terms.**

7. Write the repeating decimal as a common fraction **in lowest terms.**

8. Simplify the following square roots of **IMAGINARY NUMBERS.**

a. b.

c.

9. Simplify the following complex numbers. **Give answers in the form a+bi.**

a. b.

c.

**Unit 7**

1. Matching: (Not all options are used)

a. \_\_\_\_\_ There are 2 imaginary solutions

b. \_\_\_\_\_ There are 2 real, irrational solutions

c. \_\_\_\_\_ There is one real, rational (double)

solution

d. If D is positive and a perfect square, then

\_\_\_\_\_ There are 2 real, rational solutions

e. If D is positive and NOT a perfect square, then

\_\_\_\_\_ The conjugate of

f. If D is negative, then

\_\_\_\_\_ Discriminant

g. If D = 0, then

\_\_\_\_\_ Standard Quadratic Equation

h.

\_\_\_\_\_ Quadratic Formula

i.

2. Use the quadratic formula to solve the following equations. **Give answers involving radicals in simplest radical form (aka: no decimals).**

a. b.

3. Complete the square to solve the following equations. **Give answers involving radicals in simplest radical form (aka: no decimals).**

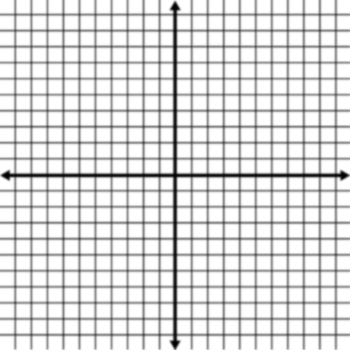
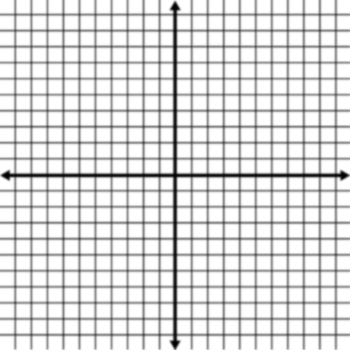
a. b.

4. Without solving each equation, use the discriminant to determine the nature of its roots.

a. b.

c. d.

5. Sketch the graph of the quadratic function with each given vertex and intercept.

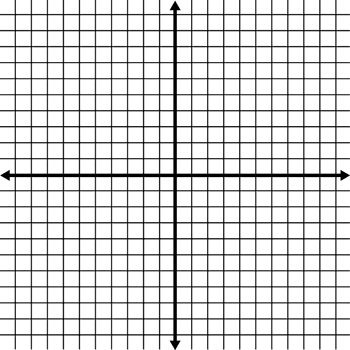
a. b.

**6.** Consider the quadratic function

a. What is the y-intercept?

b. Transform the equation into vertex form.

7. An equation was put into vertex form and the result was

 a. State the **coordinates** of the vertex.

b. State the **equation** of the axis of symmetry.

c. State the x-intercepts

d. Graph the equation

8. Find the equation for the parabola that contains the points, and . **Please show Matrix A and Matrix B.**

**Unit 8**

1. If *y* varies directly as *x*, and , when ,

a. Find the k-value b. Find *x* when

2.If *p* varies **inversely** with the square of *q*, and when .

a. Find the k-value b. Find *p* when

3. Divide using long division

a. b.

4. Divide using synthetic division.

5. Use synthetic division to find for the given polynomial and the given number c.

Is 4 a factor of ?

6. Consider the function

a. Sketch a graph of the function.

b. Find the values of all zeros of the function above.

**Unit 9**

1. Rewrite in radical form.

a. b. c.

2. Write in exponential form.

3. Solve the equation.

4. Simplify.

a. b. c. d.

5. Solve for x.

6. Write the equation in exponential form. 7. Write the equation in logarithmic form

8. Simplify each logarithm.

a. b. c.

9. Express each logarithm in terms of and.

1. b.

10. Express as a logarithm of a single number or expression.

a. b.

c. d.

11. Find the decimal approximation for the logarithm using the change of base property. Please show all work and for decimals, round to the nearest thousandth.

a. b.

12. Find the value of *x* in the equations below. For decimals, round to the nearest thousandth.

a. b. c.

d. e. f.

13. (5pts) Find the formula for in the following exponential function.

Given:

14. (5pts each) Find the following values for the given exponential function.

1. b.

**Unit 10**

1. Write the formula for the following sequence:

2. Find the specified term of the arithmetic sequence:

3. Insert 4 arithmetic means between 89 and 71.5

4. Write the formula for the following sequence:

5. Find the specified term of the geometric sequence:

6. Insert four geometric means between 6 and -192

7. Craig has taken a job with a starting salary of $22,200 and annual raises of $650. What will he be making in 24 years?

8. Bernice has taken a job with a starting salary of $24,000 and annual rises of 4%. What will be her salary during her 8th year on the job?

9. Write the series in expanded form and find the sum.

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10. Rewrite the series into sigma notation.

a. b.

c. d.