Parent Graphs (F.IF.7B; F.BF.3; A.SSE.3; A.REI.4)
Exam

Name: _____

Date: _____ Per: _____

FEEDBACK RUBRIC:

|	Mastery (4)	Proficient (3)	Nearly Proficient (2)	Needs Improvement (1)
Find roots and vertex of Quadratic function by completing the square.	Student is able to correctly complete the square and find the roots of a quadratic function. Correctly identifies the vertex. Justification is complete.	Student is able to complete the square and find the roots of a quadratic function with minor errors. Vertex is identified and justification is complete.	Student is able to correctly complete the square and find the roots of a quadratic function of 1 of the 2 quadratics. Vertex is identified and justification is complete and makes significant progress towards solving the other problem.	Student is able to correctly complete the square and find the roots of a quadratic function of 1 of the 2 quadratics. Vertex is identified and justification is flawed or missing.
Identify equation and locator point of a function given the graph.	Student is able to correctly identify each function, equation and locator point given graphs.	Student is able to identify each function, equation and locator point of given graphs with minor errors.	Student is able to identify each function and/or equation and locator point of given graphs with errors.	Student is able to correctly identify the function, equation and locator point of 1 of the 2 graphs.
Graphing Transformations	Student is able to correctly transform an equation with given parameters and explanation. Correctly identifies components of each equation from graphing form and graphs correctly. Explanation clearly shows their understanding of the problem.	Student is able to correctly transform an equation with given parameters and give an explanation with minor errors. Correctly identifies components of each equation from graphing form with explanation. Explanation may have minor errors.	Student confuses pieces of a transformation with given parameters. Graph may have minor errors. There is minimal explanation. Identify components with minor errors but graph matches incorrect information.	Student attempt to perform transformations is flawed. Little or no explanation. Student is not able to correctly identify any components of graph, graph and explanation is flawed.
Analyzing	Student can extract information and identify each component of the equation correctly. Graph is correct and explanation is clear. Use of equation to	Student can extract information, create an equation, make a prediction with explanation, but may have minor errors.	Student is able to extract information or create an equation with some errors. Student makes a prediction with little or no explanation.	Student is unable to extract information and write an equation correctly. There is little or no explanation.

No Calculator Allowed   **Show your work on all problems.**

1. Write the equation and label the locator point of each graph below. Don't forget to find the a-value.
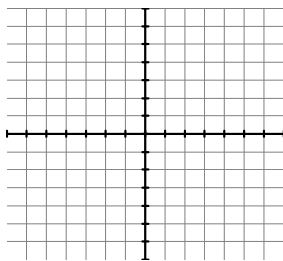
a)

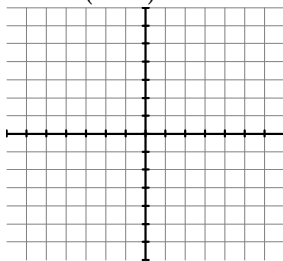y = _____

L.P._____

b)
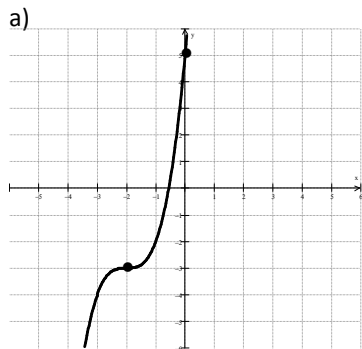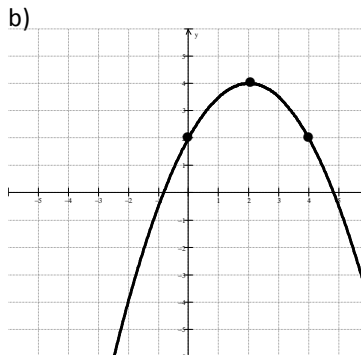
y = _____

L.P._____

2. Sketch the parent graph of each equation and then in a second color the transformation on the axes provided. Name the locator point and dash in any asymptotes. Describe the transformation of the graph compared to the parent graph.
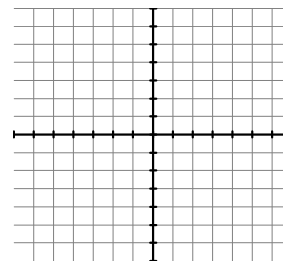
a) $y = -2|x+4|+3$

L.P._____
Description:

b) $y = \dfrac{1}{(x-1)} - 2$

L.P._____
Description:

c) $y = 3\sqrt{x+4} - 2$


L.P._____
Description:

3. **"Happy Holidays!!"** came the greeting from the old white-haired gentleman in the sleigh. Good old Nick needs your help getting from Andria's house to Tong's house on Christmas Eve. Of course, that means rooftop to rooftop. With your knowledge of parabolas, Santa has asked you to guide his sleigh (poor Rudolph). It is 300 feet between their rooftops and there is a really big tree halfway between their houses that stands 190 feet above the roof levels. If Santa must fly a parabolic path and he wants to just clear the tree, what would be the equation of the parabola that he would enter into his on-board computer? **"HO! HO! HO!"**

Diagram: Equation:

4. Find the center and radius of the following circle. Then sketch an ACCURATE graph. Make sure to scale the axes appropriately.

$x^2 - 6x + y^2 + 8y - 11 = 0$
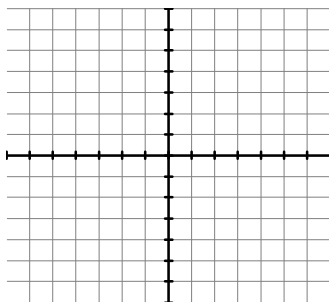
Center: Radius:

Equation:

5. Find the **vertex** and the **roots** for each of the following by **completing the square**. Be organized and neat! Circle the graphing form of the equation.

a) $y = x^2 + 6x - 16$ Vertex: Roots: b) $y = 2x^2 - 24x - 3$ Vertex: Roots:

c) Verify your vertex for part **a** by using another method. Show all steps clearly.

6. For the "parent graph" $y = f(x)$, sketch the graph of the new equation on the same axes.

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