Quadratic Functions. Summative Assessment

Please read and sign Math Honor Statement: ``On my honor, I pledge I have neither given nor received unauthorized assistance during the completion of my work.''

Signature: _____

Directions:

For this assessment, you must **work alone**.

You are not permitted to obtain help from people other than asking clarifying questions of Mrs Bendall or Mrs Evans.

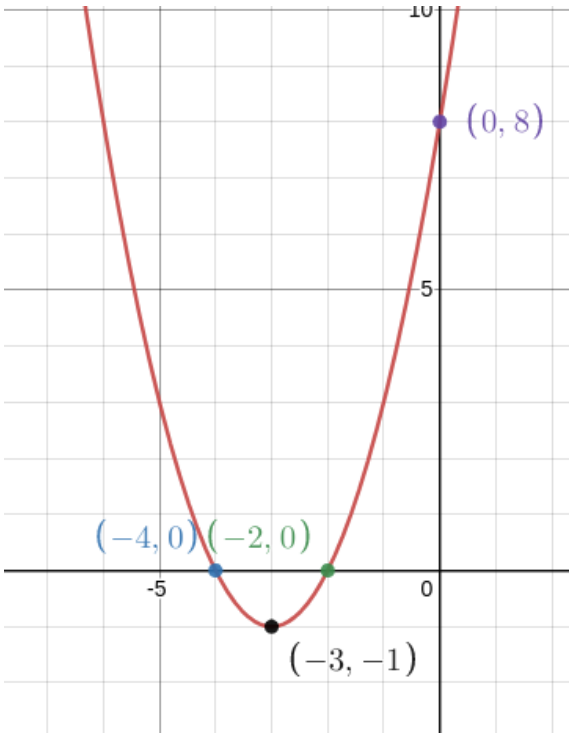
You may use your notes, a graphing calculator and Desmos to complete this assessment.

You have to complete the assessment by the end of the block at 1:00 pm.

Each Question is worth five points.

To obtain full credit on each question, you must show every step you took to reach the solution when asked to *show your work*.

Question 1. Fill in the blanks.



1. The parabola opens _____
2. The x-intercepts are _____
3. The y-intercept is _____
4. The vertex is _____
5. The axis of symmetry is _____

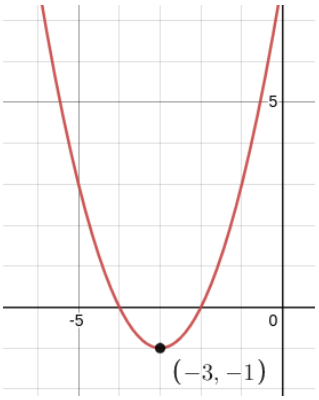
Question 2. Transform the equation in the standard form

$f(x) = 3x^2 - 6x + 5$ to the vertex form.

Answer:

Show your work here:

Question 3. Consider the graph below.



A) To what function family does the graph belong?

Answer:

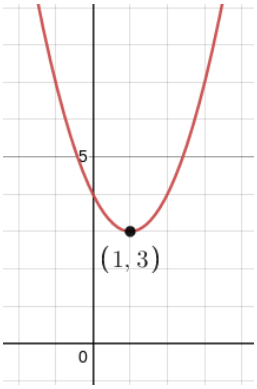
B) What is the domain of the function shown in the graph?

Answer:

C) What is the range of the function shown in the graph?

Answer:

Question 4. Consider the graph below.



A) What function family does the graph belong?

Answer:

B) Write the equation of the parent function of the function family identified in part A.

Answer:

C) List, in order, the transformations that can be applied to the parent function to obtain the given graph. Use English language, such as *Up three units*, to describe the transformations.

Note: There is space to write four transformations. You must fill in only as many as you need for this problem.

Answer: Transformation 1:

Transformation 2:

Transformation 3:

Transformation 4:

Question 5. Consider the equation $f(x) = -|x + 4| + 7$

A) What function family does it belongs to?

Answer:

B) Write the equation of the parent function of the family.

Answer:

C) List, in order, the transformations that can be applied to the parent function to obtain the given equation. Use English language, such as *Up three units*, to describe the transformations.

Note: There is space to write four transformations. You must fill in only as many as you need for this problem.

Answer:

Transformation 1:

Transformation 2:

Transformation 3:

Transformation 4:

Question 6. Write the equation of the function obtained from

$p(x) = |x|$ by performing the following transformations

1. Reflection over the x-axis
2. Up translation by 3 units
3. Left translation by 5 units

For full credit, you must show the equation of the function after each transformation.

Answer:

Equation after Transformation 1:

Equation after Transformation 2:

Equation after Transformation 3:

Directions for questions 7 to 12: Factor the following quadratic functions.

You may choose any method you wish to factor. For full credit you must show all the steps needed to reach the result.

Question 7. $x^2 - 3x + 2$

Answer:

Show your work here:

Question 8. $x^2 + 5x + 4$

Answer:

Show your work here:

Question 9. $2x^2 + x$

Answer:

Show your work here:

Question 10. $x^2 - 25$

Answer:

Show your work here:

Question 11. $-x^2 + 3x - 2$

Answer:

Show your work here:

Question 12. $x^2 + 8x + 16$

Answer:

Show your work here:

Directions for questions 12 to 16. Solve the following quadratic equations. Write the solutions and specify if they are real or complex.

Question 13. $(x-8)(x+1000)=0$

Solution 1:

Solution 2:

Show your work here:

Question 14. $-x^2+100=0$

Solution 1:

Solution 2:

Show your work here:

Question 15. $x^2 + x - 7 = 0$

Solution 1:

Solution 2:

Show your work here:

Question 16. $x^2 + 2x - 5 = 0$

Solution 1:

Solution 2:

Show your work here: