Algebra 1 Name_____ ID: 1

9.5 Graphing Quadratics- Parabolas

Date_____ Algebra ____

Make sure each person in your group has a worksheet and a graphing calculator. You should complete the worksheet in pencil!!!!

1) Consider the quadratic: $y = 2x^2 - 12x + 16$

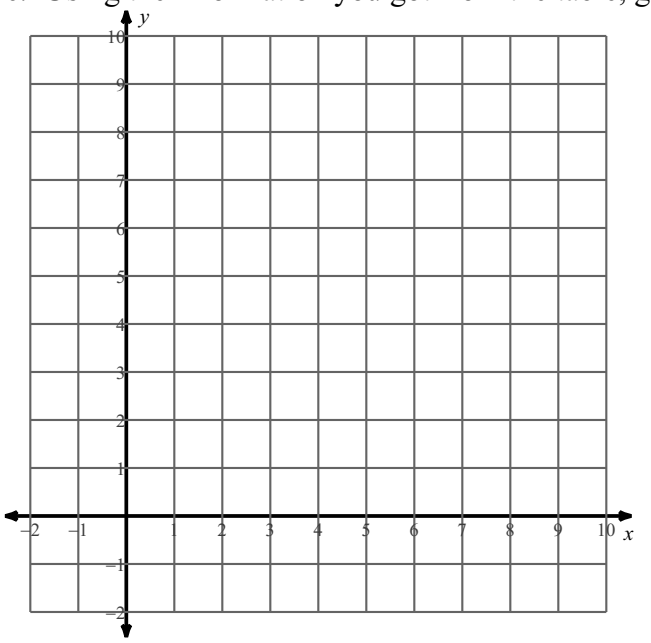
a. Go to Y= in the graphing calculator and clear out anything that is in the y=.

b. Enter the quadratic equation above into Y1.

c. Go to the TABLE in the calculator (click 2nd then graph - upper right hand corner).

d. Fill in the table below:

e. Using the information you got from the table, graph the parabola:

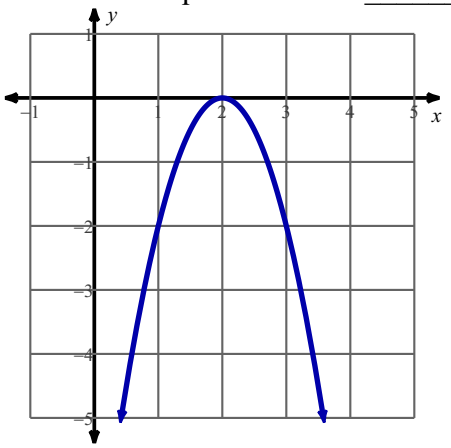


2) The VERTEX of a parabola is the maximum or minimum point on the graph (the top or bottom of the arch). Use the GREEN pen to draw a dot on the VERTEX of your parabola.
What are the coordinates of the vertex from your example problem:_____

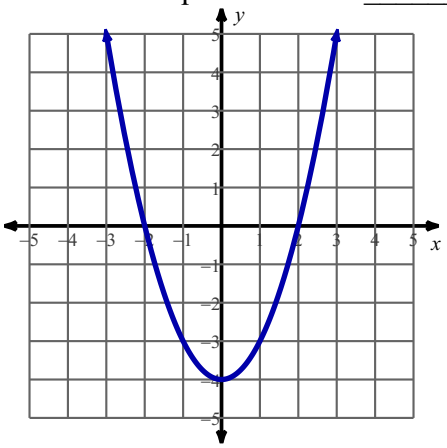
3) The ROOTS of ZEROS of a parabola are where the parabola crosses the x-axis.
Use the BLUE pen to draw dots on the roots of your parabola.
The values of your roots are x =_____ and x = _____

4) The AXIS OF SYMMETRY (AoS) is the equation of the vertical line that goes right through the vertex.
Use the RED pen to draw a dotted vertical line on your parabola.
The equation of the axis of symmetry is x =_____

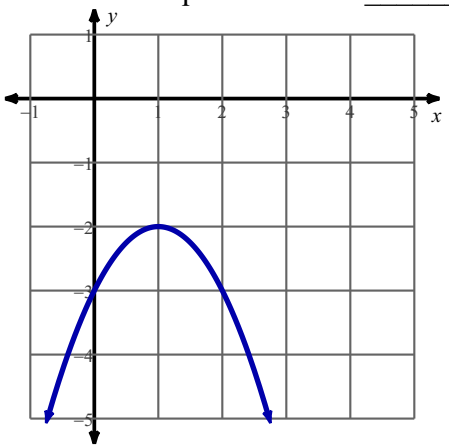
5) What ar the corrdinates of the vertex:_____
What are the roots: _____
What is the eq. of the AoS? _____



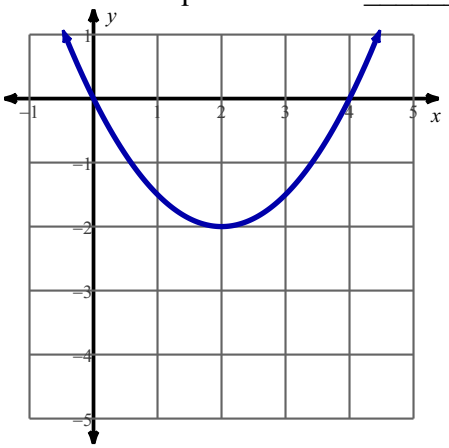
6) What ar the corrdinates of the vertex:_____
What are the roots: _____
What is the eq. of the AoS? _____



7) What ar the corrdinates of the vertex:_____
What are the roots: _____
What is the eq. of the AoS? _____



8) What ar the corrdinates of the vertex:_____
What are the roots: _____
What is the eq. of the AoS? _____



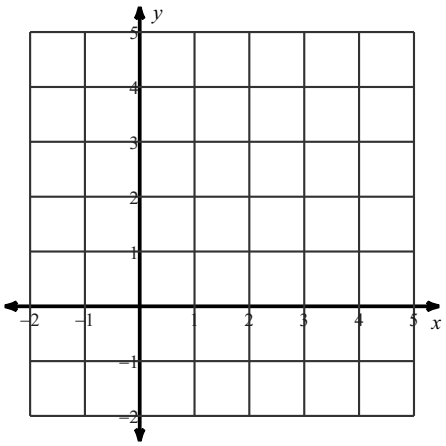
9) Follow the same process as in #2 for the following quadratic: $y = -x^2 + 4x$.

Look at the graph of the parabola. Use the TRACE button to move the flashy blinky guy around th graph, what is the approximate coordinates of the vertex?_____

Fill in the table:

And graph the parabola with AT LEAST FIVE POINTS ! The first point should be the VERTEX and then add at least 2 points on either side of the vertex! If the parabola has roots, be sure to include those on your graph!

Vertex:_____ AOS: _____ Roots:_____

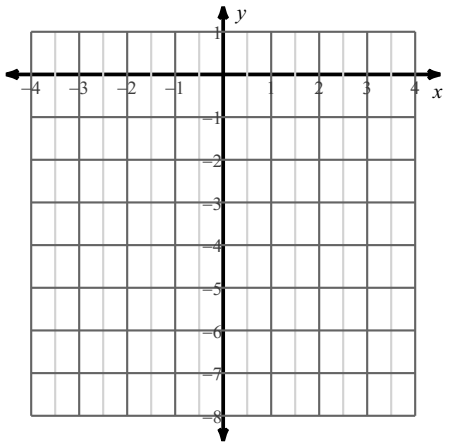


Practice: Remember, the standard form of a quadratic is $y = ax^2 + bx + c$!

10) a. Copy down the table for the quadratic equation in the next problem (use the x values that are shown on the graph)

b. Vertex:_____
Roots:_____
AoS:_____

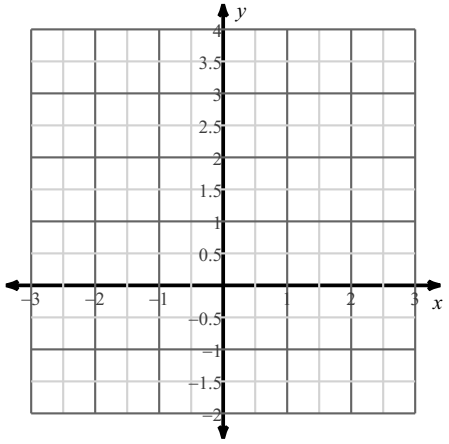
11) $y = -3x^2 + 6x - 6$



12) a. Copy down the table for the quadratic equation in the next problem (use the x values that are shown on the graph)

b. Vertex:_____
Roots:_____
AoS:_____

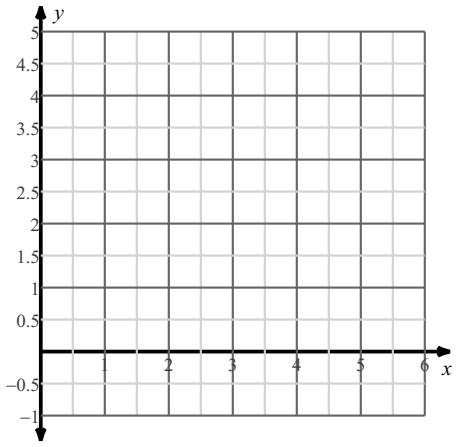
13) $y = x^2 + 2x$



14) a. Copy down the table for the quadratic equation in the next problem (use the x values that are shown on the graph)

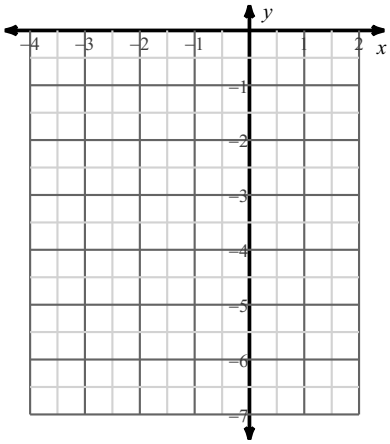
b. Vertex:_____
Roots:_____
AoS:_____

15) $y = -x^2 + 6x - 5$

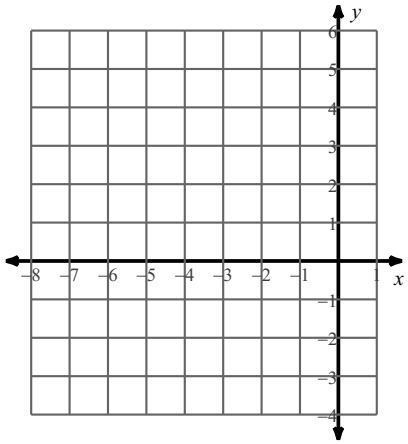


Sketch the graph of each function. You should enter it into your calculator, and look at the table to graph it, but you do not have to copy down the table.

16) $y = -x^2 - 2x - 3$



17) $y = 2x^2 + 16x + 29$



18) THE STANDARD FORM OF A QUADRATIC EQUATION FOR GRAPHING IS:

THE VERTEX OF A PARABOLA IS:_____ AND IS ALWAYS A _____

THE AXIS OF SYMMETRY IS _____
AND IS IN THE FORM:_____

THE ROOTS OR ZEROS OF A PARABOLA ARE_____
AND ARE IN THE FORM:_____

When graphing a parbola I must always first graph the:_____, then add at least ____ more points, ____ on either side of the vertex. If the parabol has _____, I should graph those too!

Solve each equation by factoring, completing the square or using the quadtratic formula.

19) $r^2 - 8r + 12 = 0$

20) $n^2 - 4n - 14 = -9$

21) $6x^2 + 6x + 7 = 3x - 6x^2$

22) $5x^2 = 75 - 10x$

Find the discriminant of each quadratic equation then state the number and type of solutions.

23) $-2a^2 - 10 = 9a$

24) $-2p^2 = -2p + 8$