Graph: $f(x) = x^2 - 6x + 8$

Vertex: _____ Axis of Symmetry: _____

Interval of Increase: _____

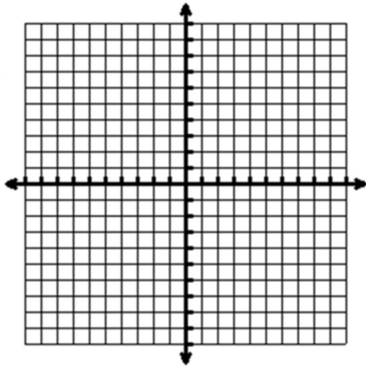
Interval of Decrease: _____

Extrema: _____ Max/Min Value: _____

Domain: _____ Range: _____

Y-Intercept: _____ Zeroes: _____

x	f(x)



Graph: $f(x) = x^2 + 6x + 9$

Vertex: _____ Axis of Symmetry: _____

Interval of Increase: _____

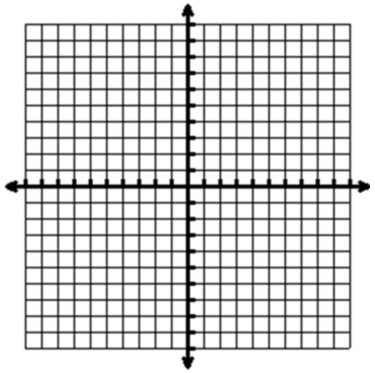
Interval of Decrease: _____

Extrema: _____ Max/Min Value: _____

Domain: _____ Range: _____

Y-Intercept: _____ Zeroes: _____

x	f(x)



Graph: $f(x) = x^2 - 4x$

Vertex: _____ Axis of Symmetry: _____

Interval of Increase: _____

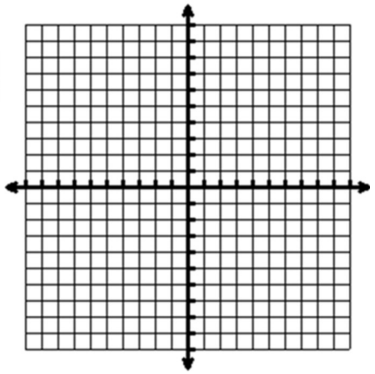
Interval of Decrease: _____

Extrema: _____ Max/Min Value: _____

Domain: _____ Range: _____

Y-Intercept: _____ Zeroes: _____

x	f(x)



Standard Form of a Quadratic

$$f(x) = ax^2 + bx + c$$

Vertex: $\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$ **y-intercept: (0, c)**

a > 0: opens up **a < 0: opens down**

Example: $f(x) = 2x^2 + 28x + 46$

For the following, identify the vertex of the graph and whether it is opening up or down.

Ex. 1 $f(x) = x^2 + 6x + 8$

Ex. 3 $g(x) = -x^2 - 5$

Ex. 2 $h(x) = -2x^2 + 4x + 2$

Ex. 4 $m(x) = x^2 + 6x$

Graph $y = 2x^2 + 6x + 1$

1. Label coefficients as a, b, and c.
2. Find the vertex using $x = \frac{-b}{2a}$ and then substitute that value into the equation.
3. Draw the axis of symmetry (dotted).
4. Identify two x-values close to the vertex to evaluate and then reflect those points across the axis of symmetry.
5. Draw a parabola through plotted points.