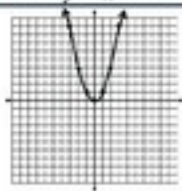


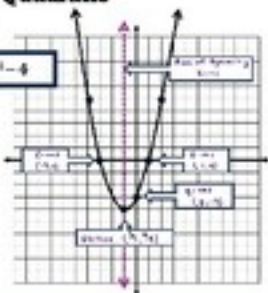
Key Characteristics of Quadratic Functions

Parent Function

$$y = x^2$$



$$y = (x + 1)^2 - 4$$



Vertex Form: $y = a(x - h)^2 + k$

Graph: The graph of a quadratic function forms a Curved line called a Parabola.

- If $a > 0$, then the parabola opens up and the vertex is a minimum.
- If $a < 0$, then the parabola opens down and the vertex is a maximum.

Axis of Symmetry (AOS): The line that divides the parabola in half.

- Use the formula $x = h$ to find the axis of symmetry.

Vertex: The highest or lowest point on the parabola.

- The vertex can be found from the function as the point (h, k) .
- The h -coordinate gives the value of the AOS.
- The k -coordinate gives the value of the minimum or maximum.

Special Note:

If the graph is based on V in quadrants then it's Quadrant.
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Y-intercept: The point where the parabola intersects the y-axis.

- The y -intercept can be found using the formula $y = ah^2 + k$, resulting in the point $(0, k)$.

X-intercepts: The point(s) where the parabola intersect the x-axis.

- They are also called the solutions, roots, zeros.