7.2 – Analyzing Quadratic Functions

Graph the function with equation \( y = x^2 \) by completing the table of values.
Join the points with a smooth curve. The graph of this function is called a parabola.

<table>
<thead>
<tr>
<th>( x )</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The **axis of symmetry** is the “mirror” line which splits the parabola in half.
State the equation of the axis of symmetry

The **vertex** of a parabola is where the axis of symmetry intersects the parabola. The vertex can represent a **minimum point** or **maximum point** depending on whether the parabola opens up or down.

Label the vertex V on the graph and state its coordinates.

The maximum or minimum **value** of a quadratic function occurs at the vertex and is represented by the y-coordinate of the vertex. Complete the following:

The __________ value of the function with equation \( y = x^2 \) is ____.

State the domain and range of the function with equation \( y = x^2, \ x \in \mathbb{R} \).

**Domain:** ______________________          **Range:** ______________________