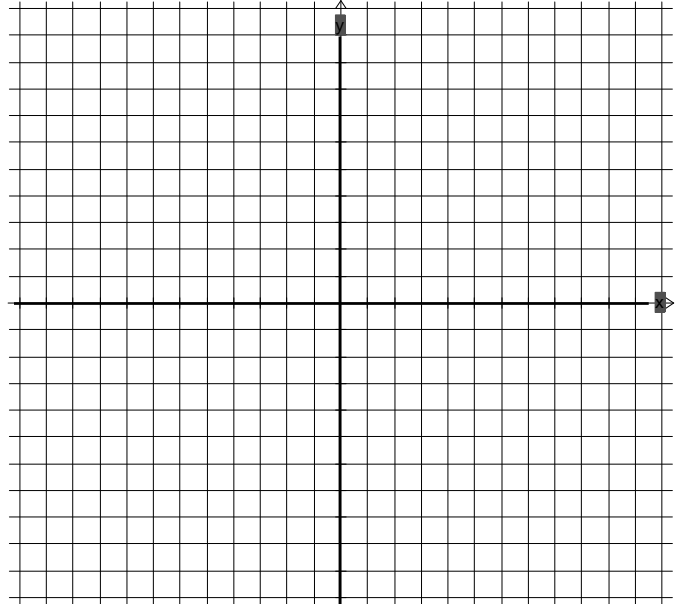### Worksheet 4-2: Graphing Quadratic Relations by Table of Values

**Basic Parabola:** $y = x^2$

The most basic parabola is the graph of the quadratic relation $y = x^2$.

All other parabolas are the **transformations** of the basic parabola $y = x^2$.

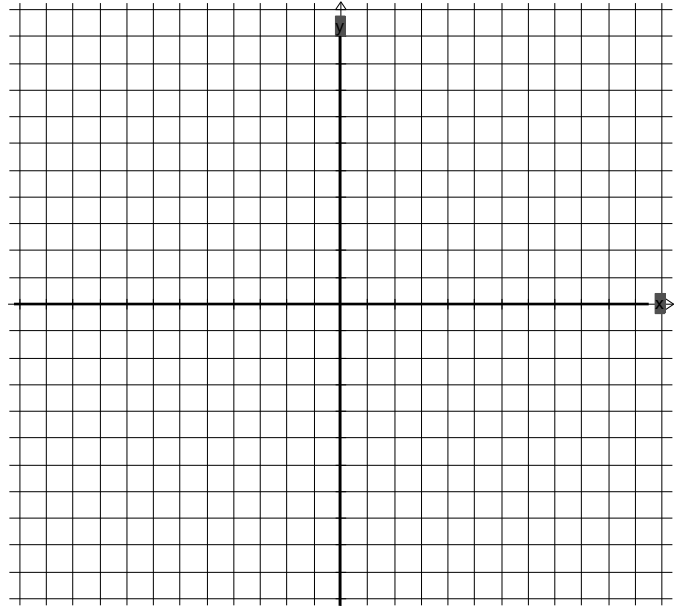**1. Graph** $y = x^2$ **by first completing the following table of values.**

| $x$ | $x^2 = y$ | $(x, y)$ |
|-----|-----------|----------|
| 3   |           |          |
| 2   |           |          |
| 1   |           |          |
| 0   |           |          |
| −1  |           |          |
| −2  |           |          |
| −3  |           |          |

**(a) State the ordered pair of the vertex.**

**(b) Does the parabola open upward or downward?**

**(c) State the maximum or minimum $y$-value.**

**(d) State the equation for the axis of symmetry.**

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**Assigned Work: WS 4-2; p. 174 #1 (a to c)**

**2. Graph** $y = x^2 - 2x$

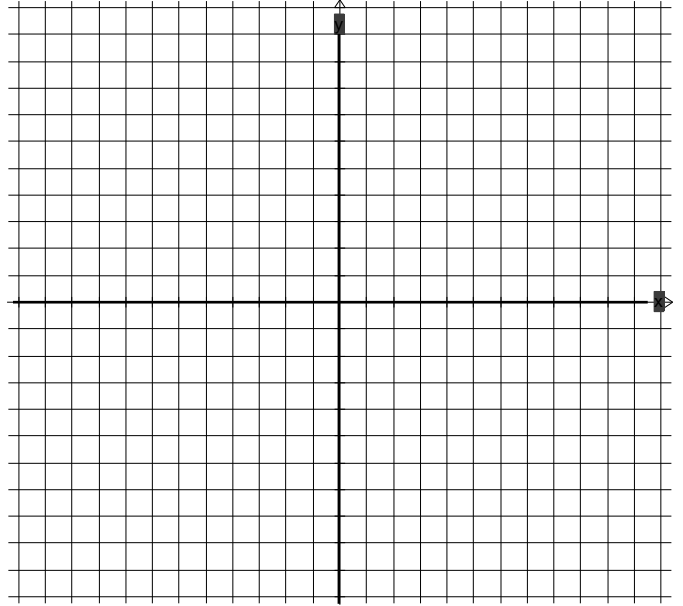| X | $x^2 - 2x = y$ | $(x, y)$ |
|---|---|---|
| 4 | | |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| −1 | | |
| −2 | | |

**(a) State the ordered pair of the vertex.**

**(b) Does the parabola open upward or downward?**

**(c) State the maximum or minimum $y$-value.**

**(d) State the equation for the axis of symmetry.**

**3. Graph** $y = -x^2$

| $x$ | $-x^2 = y$ | $(x, y)$ |
|-----|------------|----------|
| 3   |            |          |
| 2   |            |          |
| 1   |            |          |
| 0   |            |          |
| −1  |            |          |
| −2  |            |          |
| −3  |            |          |

**(a) State the ordered pair of the vertex.**

**(b) Does the parabola open upward or downward?**

**(c) State the maximum or minimum $y$-value.**

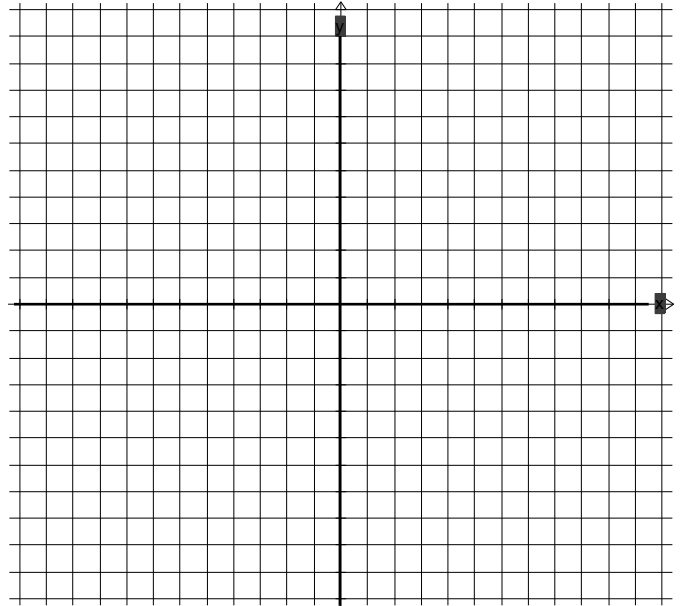**(d) State the equation for the axis of symmetry.**

**4. Graph** $y = -x^2 + 7$

| $x$ | $-x^2 + 7 = y$ | $(x, y)$ |
|-----|----------------|----------|
| 3   |                |          |
| 2   |                |          |
| 1   |                |          |
| 0   |                |          |
| −1  |                |          |
| −2  |                |          |
| −3  |                |          |

**(a) State the ordered pair of the vertex.**

**(b) Does the parabola open upward or downward?**

**(c) State the maximum or minimum $y$-value.**

**(d) State the equation for the axis of symmetry.**