Name:

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Chapter 4 Notes Packet on Quadratic Functions and Factoring

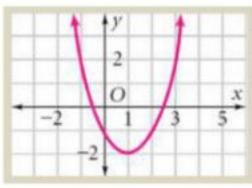
Notes #15: Graphing quadratic equations in standard form, vertex form, and intercept form.

A. Intro to Graphs of Quadratic Equations: $y = ax^2 + bx + c$

- A ______ is a function that can be written in the form $y = ax^2 + bx + c$ where a, b, and c are real numbers and $a \ne 0$. Ex: $y = 5x^2$ $y = -2x^2 + 7$ $y = x^2 - x - 3$
- The graph of a quadratic function is a U-shaped curve called a . The maximum or minimum point is called the

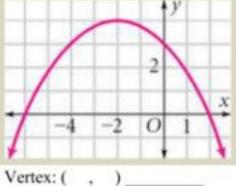
Identify the vertex of each graph; identify whether it is a minimum or a maximum.

1.)

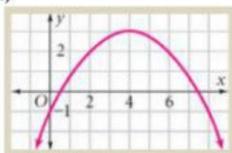


Vertex: (

2.)

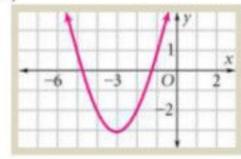


3.)



Vertex: (,)

4.)



Vertex: (,) $y = ax^2 + bx + c$

B. Key Features of a Parabola:

Direction of Opening: When a > 0, the parabola opens .

When a < 0, the parabola opens :

Width: When |a| < 1, the parabola is ______ than $y = x^2$

When |a| = 1, the parabola is the _____ width as $y = x^2$

When |a| > 1, the parabola is _____ than $y = x^2$

- Vertex: The highest or lowest point of the parabola is called the vertex, which is on the axis of symmetry. To find the vertex, plug in $x = \frac{-b}{2a}$ and solve for y. This yields a point (____, ___)
- Axis of symmetry: This is a vertical line passing through the vertex. Its equation is: $x = \frac{-b}{2a}$
- x-intercepts: are the 0, 1, or 2 points where the parabola crosses the x-axis. Plug in y = 0 and solve for x.
- **y-intercept:** is the point where the parabola crosses the y-axis. Plug in x = 0 and solve for y.