

Name: _____ Period: _____

Chapter 4 Notes Packet on Quadratic Functions and Factoring

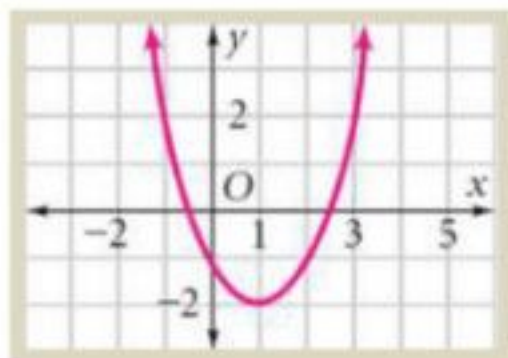
Notes #15: Graphing quadratic equations in standard form, vertex form, and intercept form.

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 $a \neq 0$. 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 _____.

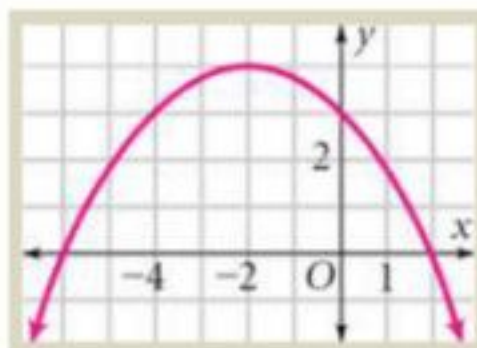
Identify the vertex of each graph; identify whether it is a minimum or a maximum.

1.)



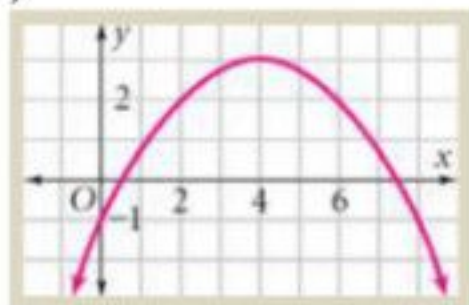
Vertex: (,) _____

2.)



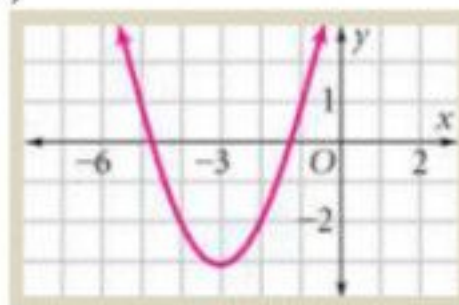
Vertex: (,) _____

3.)



Vertex: (,) _____

4.)



Vertex: (,) _____

B. Key Features of a Parabola:

$$y = ax^2 + bx + c$$

- 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 .