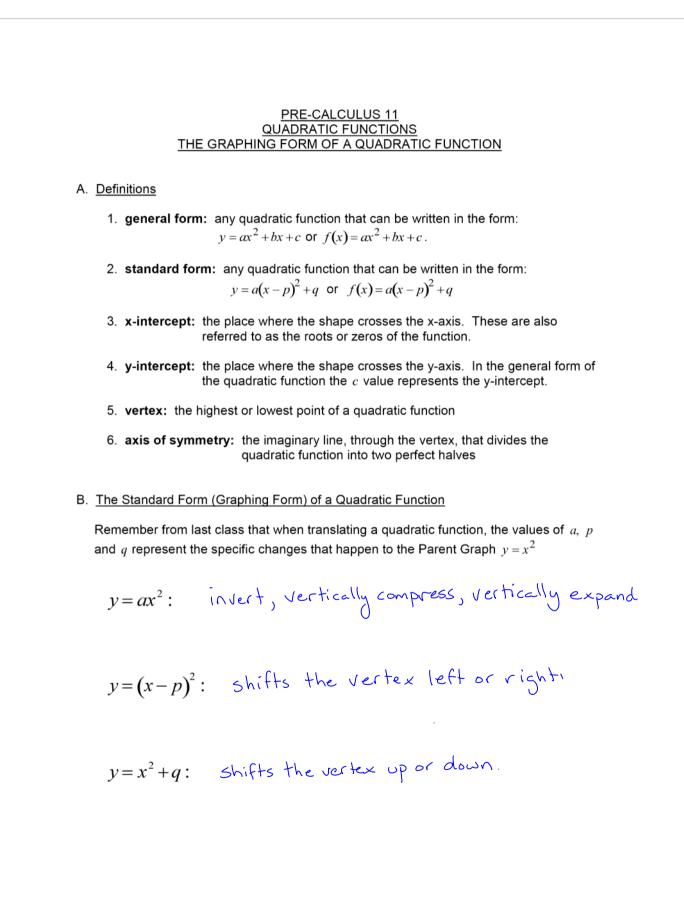
The Graphing Form of a Quadratic Function

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In Standard Form (Graphing Form) of the quadratic function $y = a(x-p)^2 + q$, the values still represent the same changes to the Parent Graph $y = x^2$.

Additionally, the values of $\left(p,q
ight)$ form the coordinates of the vertex of the parabola.

C. Examples

1) Determine the coordinates of the vertex for the following quadratic functions.

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

 $Q = 1$
 $p = 4$
 $q = -1$
b) $y = 2x^2 + 6$
 $Q = 2$
 $p = 0$
 $q = 6$
c) $y = -\frac{1}{2}(x+7)^2$
 $Q = -\frac{1}{3}$
 $p = -7$
 $q = 0$
d) $y = -0.4(x+2.8)^2 + 4.9$
 $Q = -0.4$
 $p = -3.8$
 $Q = 4.9$
Vertex (-3.8)
Vertex (-3.8)

2) Describe the transformation that is applied to the Parent Graph $y = x^2$, to get the following function.

a)
$$y = -2x^2 - 3$$

 $Q = -2$
 $p = 0$
 $q = -3$
b) $y = \frac{1}{4}(x+1)^2 + 5$
 $Q = \frac{1}{4}$
 $p = -1$
 $q = 5$
- inverted & Vertical expansion
- vertex moves to $(0_3 - 3)$
- vertex moves to $(0_3 - 3)$
- vertex moves to $(-1_3 - 5)$

Assignment: Pg. 284 #2 – 6a