

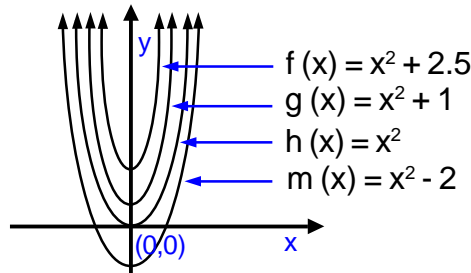


Math Study Strategies

Examples of Parabolas

Parabolas that open up:

If $a > 0$ the parabola will open **up**. The **shape** of the parabola depends on the coefficient of x . The **smaller** the coefficient, the **wider** the parabola. Conversely, the **larger** the coefficient, the **narrower** the parabola.



general form: $y = ax^2$

$$y = ax^2 + c$$

The vertex is translated on the y-axis according to the value of c in

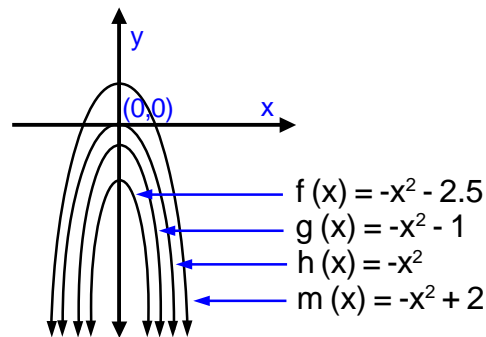
$$y = ax^2 + c$$

if $c > 0$ the parabola is shifted **up** from the origin

if $c < 0$ the parabola is shifted **down** from the origin

Parabolas that open down:

If $a < 0$ the parabola will open **down**. Again, the shape of the parabola depends on the coefficient of x . As with parabolas that open up, the **smaller** the coefficient, the **wider** the parabola. Conversely, the **larger** the coefficient, the **narrower** the parabola.



general form: $y = -ax^2$

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

The vertex is translated on the y-axis according to the value of c in

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

if $c > 0$ the parabola is shifted **up** from the origin

if $c < 0$ the parabola is shifted **down** from the origin

Note that multiplying all the coefficients in the equation of a parabola by -1 will give the equation of the identical parabola that opens in the opposite direction. For example, multiplying $f(x) = x^2 + 2.5$ by -1 will give $f(x) = -x^2 - 2.5$, as shown above.