

Finding the Equation of a Parabola

You will be required to find the equation of a parabola with the given information.

Find the equation of a parabola that has x intercepts of $(-3,0)$ and $(2,0)$.

$(-3,0)$ and $(2,0)$. *Given x intercepts of -3 and 2*

$x = -3$ $x = 2$ *If the x intercepts are -3 and 2, then the roots of the equation are -3 and 2. You must now set each root equal to zero.*

$(x+3)$ $(x-2)$ *For the first root, you will add 3 to both sides of the equal sign.
For the second root, you will subtract 2 to both sides of the equal sign.*

$x^2 + x - 6$ *Now multiply the results together, and you have a quadratic expression.*

$y = x^2 + x - 6$ *Set your expression equal to y, and you have the equation of a parabola.*

In the previous example, all you need to do is set each root equal to x, and work backwards. Imagine solving a quadratic equation in the reverse. You have the solutions, and you work backwards to find out what the original problem is. Now, keep in mind, there are an infinite number of parabolas that can have those two particular x intercepts. If you wanted, for example, to find the equation of a parabola that opens down and has x intercepts of -3 and 2, you would multiply your resultant expression, $x^2 + x - 6$, by (-1). You could also multiply your expression by any other constant, and the parabola would still have the same x-intercepts.