Quadratic Inequalities

To solve the inequality

$$x^2 - 4x + 3 > 0$$

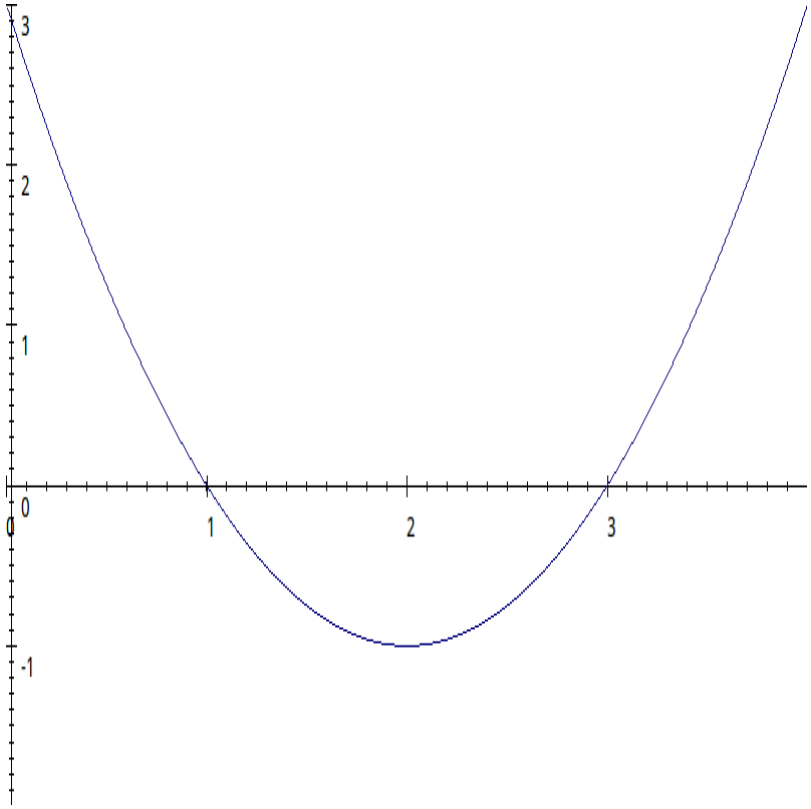
, first factorise to give
$x^2 - 4x + 3 > 0$

$$(x - 1)(x - 3) > 0$$

.
$(x - 1)(x - 3) > 0$
Now sketch the graph of

$$y = x^2 - 4x + 3$$

.
$y = x^2 - 4x + 3$



Because we are solving

$$x^2 - 4x + 3 > 0$$

we want those values of
$x^2 - 4x + 3 > 0$

$$y > 0$$

.
$y > 0$
From the graph we see this is true for

$$x < 0$$

or
$x < 0$

$$x > 3$$

.
$x > 3$
For the inequality

$$x^2 - 4x + 3 < 0$$

, we need that part of the graph below the
$x^2 - 4x + 3 < 0$

$$x$$

axis. The solution is
x

$$1 < x < 3$$

.
$1 < x < 3$
To solve the inequality

$$x^2 - 4x + 3 \geq 0$$

, just replace each 'greater than' sign with 'greater than or equal to' and each 'less than' sign with a 'less than or equal to' sign.
$x^2 - 4x + 3 \geq 0$
We get

$$x \leq 1$$

or
$x \leq 1$

$$x \geq 3$$

.
$x \geq 3$