Quadratic inequality

To solve a quadratic inequality sketch a graph of the quadratic function. The method is illustrated in the examples below.

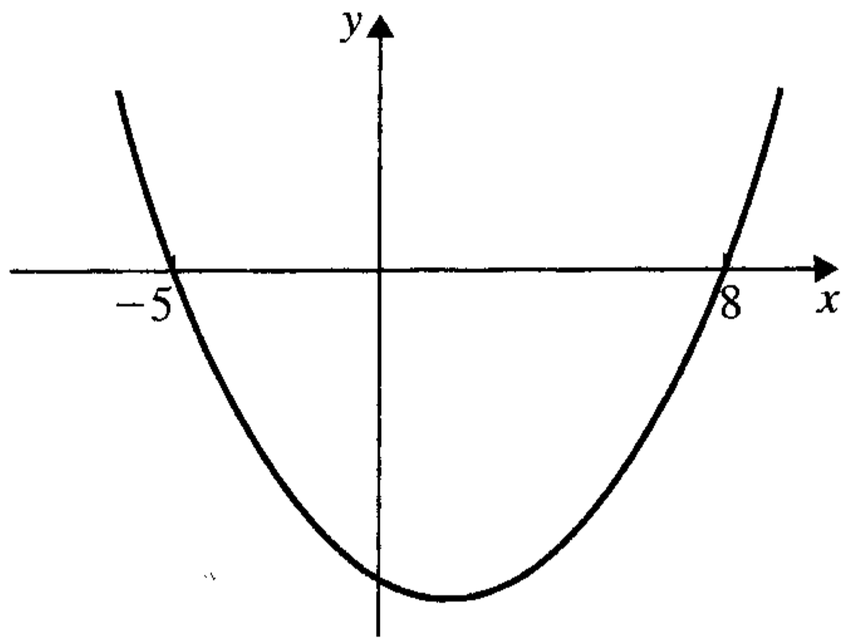
Example 1

Solve $x^2 - 3x - 40 < 0$.

We factorise to give $(x - 8)(x + 5) < 0$.

The critical values are 8 and -5.

Sketch the graph of $y = x^2 - 3x - 40$.



We are looking below the x-axis so we want *one* region, and hence *one* inequality.

So the solution is $-5 < x < 8$.

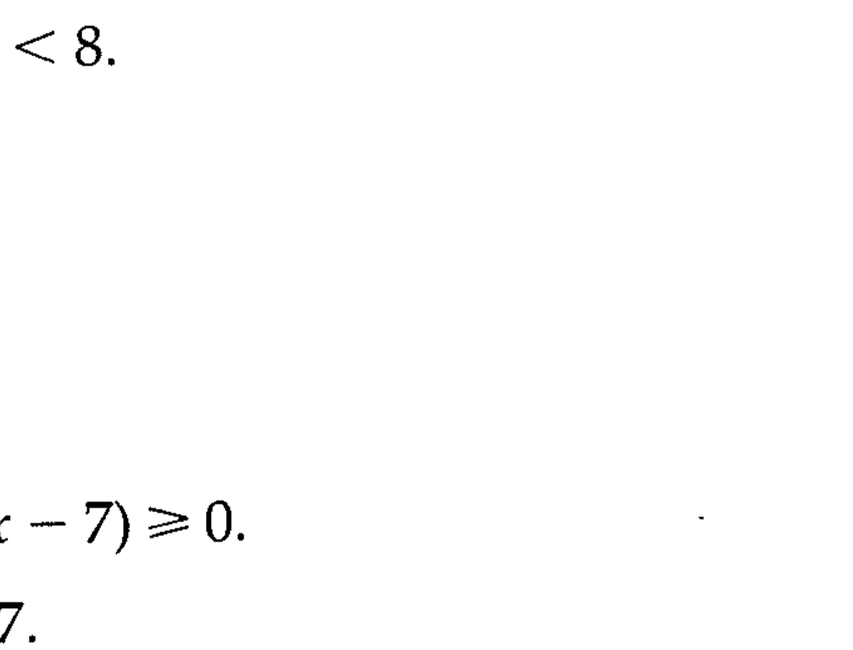
Example 2

Solve $x^2 - 10x + 21 \geqslant 0$.

Factorise to give $(x - 3)(x - 7) \geqslant 0$.

Critical values are 3 and 7.

Sketch the graph of $y = x^2 - 10x + 21$.



We are looking above x-axis so we want *two* regions, and hence *two* inequalities.

So the solution is $x \leqslant 3$ or $x \geqslant 7$.