Inequalities

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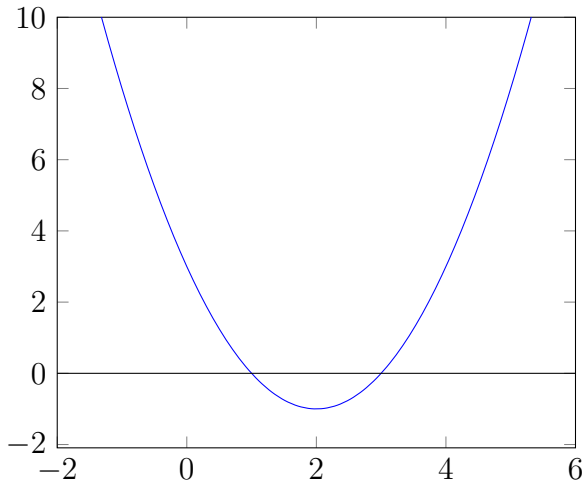
When multiplying inequalities with negative reals then the relation must swap sign. e.g.: $-x > -4 \iff x < 4$
With quadratic inequalities it is always worth sketching a graph so that you can visualise the area that you are trying to get.

Example 1:

$$x^2 - 4x + 3 < 0$$
$$(x-3)(x-1) < 0$$
$$\therefore 1 \leqslant x \leqslant 3$$



Thinking:

$$ab > 0 \iff ((a > 0)\ \&\&\ (b > 0))\ ||\ ((a < 0)\ \&\&\ (b < 0))$$
$$a, b \in \mathbb{R}$$