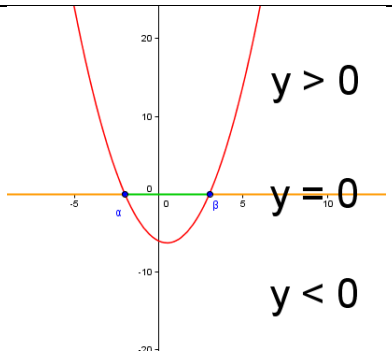
Quadratic inequalities

The purpose of this part is to solve inequalities of the form

$ax^2+bx+c>0\ (\geq 0)$ *or* $ax^2+bx+c<0\ (\leq 0)$

$b^2-4ac>0$	$b^2-4ac=0$	$b^2-4ac<0$
$f(x)=ax^2+bx+c$ $f(x)=a(x-\alpha)(x-\beta)$	$f(x)=ax^2+bx+c$ $f(x)=a(x-\alpha)^2$ The parabola is TANGENT to the x-*axis*	$f(x)=ax^2+bx+c$ $f(x)$ *can't be factorised* The parabola does not cross the x-*axis*.

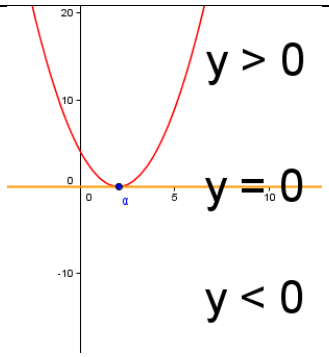
$a>0$



$ax^2+bx+c>0$ *for* $x<\alpha$ *or* $x>\beta$

$ax^2+bx+c<0$ *for* $\alpha<x<\beta$

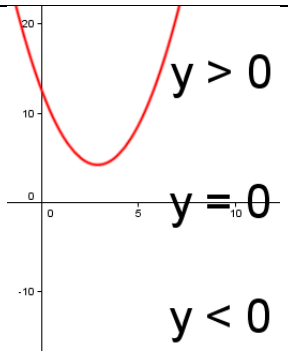
$ax^2+bx+c=0$ *for* $x=\alpha$ *or* $x=\beta$



$ax^2+bx+c>0$ *for* $x<\alpha$ *or* $x>\alpha$

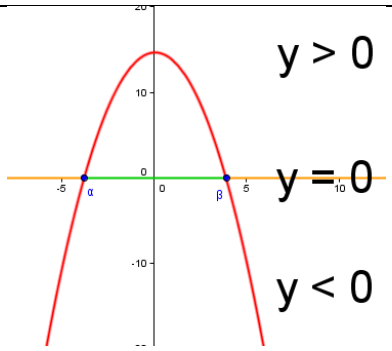
$ax^2+bx+c<0$ *has no solution*

$ax^2+bx+c=0$ *for* $x=\alpha$



$ax^2+bx+c>0$ *for all* x

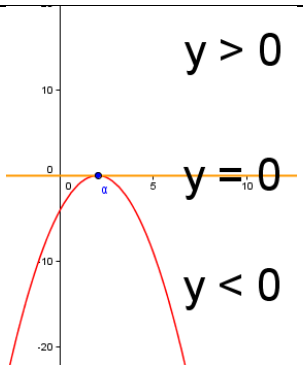
$a<0$



$ax^2+bx+c>0$ *for* $\alpha<x<\beta$

$ax^2+bx+c<0$ *for* $x<\alpha$ *or* $x>\beta$

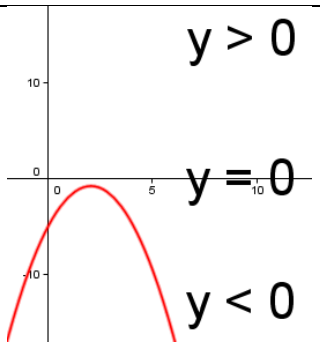
$ax^2+bx+c=0$ *for* $x=\alpha$ *or* $x=\beta$



$ax^2+bx+c>0$ *has no solution*

$ax^2+bx+c<0$ *for* $x<\alpha$ *or* $x>\alpha$

$ax^2+bx+c=0$ *for* $x=\alpha$



$ax^2+bx+c<0$ *for all* x