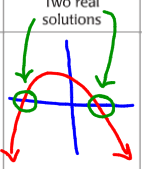
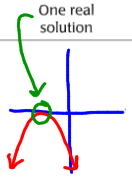
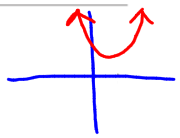
The Discriminant → b^2-4ac

Using the Discriminant of $ax^2 + bx + c = 0$

Value of discriminant	$\sqrt{}$ positive $b^2 - 4ac > 0$	$\sqrt{}$ 0 $b^2 - 4ac = 0$	$\sqrt{}$ negative $b^2 - 4ac < 0$
Number and type of solutions	Two real solutions	One real solution	Two imaginary solutions
Graph of $y = ax^2 + bx + c$	 Two x-intercepts	 One x-intercept	 No x-intercept

Find the discriminant of the quadratic equation and give the number and type of solutions of the equation.

a. $x^2 + 10x + 23 = 0$

$a=1 \quad b=10 \quad c=23$

$b^2-4ac = 10^2-4(1)(23)$

$= 100-92 = 8$

$8 > 0$

2 real solutions

b. $x^2 + 10x + 25 = 0$

$a=1 \quad b=10 \quad c=25$

$b^2-4ac = 100-4(1)(25) = 100-100 = 0$

1 real solution

c. $x^2 + 10x + 27 = 0$

$a=1 \quad b=10 \quad c=27$

$b^2-4ac = 10^2-4(1)(27) = 100-108 = -8$

$-8 < 0$

2 imaginary solutions