

Given the quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Quadratic Formula song:

<https://www.youtube.com/watch?v=bSQ7nxjmXXg>

<https://www.youtube.com/watch?v=b1q1pPI79TY>

Find the value of the discriminant ($b^2 - 4ac$) without using a calculator for the following problems:

1. $3x^2 - 5x + 7 = 0$

$a=3$
 $b=-5$
 $c=7$

$(-5)^2 - 4(3)(7)$
 (-5)

2. $2x^2 - 3x - 5 = 0$

$a=2$
 $b=-3$
 $c=-5$

$(-3)^2 - 4(2)(-5)$
 (49)

3. $x^2 - 6x + 9 = 0$

$a=1$
 $b=-6$
 $c=9$

$(-6)^2 - 4(1)(9)$
 (0)

Given the value of the discriminant in the following chart, state the type of solutions (real or imaginary), and the number of solutions you would get.

4.

discriminant	real or imaginary	number of solutions
10	REAL	2
0	REAL	1 - Double Root
-4	imaginary	2

Find the zeros of the function by using the Quadratic Formula.

5. $3x^2 + 2x - 1 = 0$

$a=3$
 $b=2$
 $c=-1$

$-2 \pm \sqrt{(2)^2 - 4(3)(-1)}$
 $2(3)$

$x = -1$ $x = \frac{1}{3}$

6. $3x^2 - 4x - 2 = 0$

$a=3$
 $b=-4$
 $c=-2$

$-(-4) \pm \sqrt{(-4)^2 - 4(3)(-2)}$
 $2(3)$

$x = \frac{2}{3} \pm \frac{\sqrt{10}}{3}$

7. $-x^2 + 5x - 7 = 0$

$a=-1$
 $b=5$
 $c=-7$

$-5 \pm \sqrt{(5)^2 - 4(-1)(-7)}$
 $2(-1)$

$x = \frac{5}{2} \pm \frac{\sqrt{5}}{2} i$

8. $x^2 + 10x = -25$

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

$x^2 + 10x + 25 = 0$
 $-10 \pm \sqrt{(10)^2 - 4(1)(25)}$
 $2(1)$

$x = -5$

9. $x^2 + 6x - 5 = 0$

$a=1$
 $b=6$
 $c=-5$

$-6 \pm \sqrt{(6)^2 - 4(1)(-5)}$
 $2(1)$

$x = -3 \pm \sqrt{14}$

10. $2x^2 + 6x + 1 = 0$

$a=2$
 $b=6$
 $c=1$

$-6 \pm \sqrt{(6)^2 - 4(2)(1)}$
 $2(2)$

$x = \frac{-3}{2} \pm \frac{\sqrt{7}}{2}$