The quadratic formula states that the solutions (roots) of $ax^{2}+bx+c=0$ are

The quantity UNDER the radical sign, \_\_\_\_\_\_\_, is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

We can determine the nature of the roots without solving the equation, just by investigating the discriminant.

If the discriminant is positive, \_\_\_\_\_\_

If the discriminant is zero,\_\_\_\_\_\_\_

If the discriminant is negative \_\_\_\_\_\_\_\_

Example 1: Determine the nature of the roots:

a) $-3x^{2}+2x+1=0$ b)$ 4x^{2}+4x+1=0$ c) $3x^{2}+x+1=0$

Example 2: Find the value(s) of m so that $x^{2}+2x+1-m=0$ has two equal real roots.

Example 3: Find the value(s) of m so that $-2mx^{2}+3x-2=0$ has no real roots.

Example 4: Find the value(s) of m so that $x^{2}+mx+1=0$ has two distinct real roots.