Unit 4

Quadratics

The Quadratic formula is $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

The Discriminant: b^2-4ac

The quantity that appears beneath the radical sign in the quadratic formula, b^2-4ac, can tell you whether the roots of a quadratic equation are real or imaginary. **B^2 – 4ac is called the discriminant**.

Given the quadratic equation $ax^2 + bx + c = 0$ where a, b, and c are real numbers

If b^2-4ac < 0, there are two conjugate imaginary roots

If b^2 -4ac = 0, there is one real root called a double root

If $b^2 - 4ac > 0$, there are two different real roots

Example: Talk about the roots of $y = x^2$-4

a=1 b=0 c=-4 so → 0^2-4(1)(-4) → 16 → Since this quantity is greater than 0, **there are 2 real roots**

conjugate pair is in the form (6+2i) (6-2i) It is made up of a real and imaginary number