PC 11

The Discriminant

- The discriminant is the radicand in the quadratic formula.

- Symbol: _____ or _____ or _____

- The value of the discriminant and how it relates to zero determines the nature of roots (solutions of a quadratic equation)

Discriminant	Nature of roots
$Discriminant > 0$	There are two real solutions
$Discriminant < 0$	There are no real solutions
$Discriminant = 0$	There is one real solution

- When the discriminant is a square number, the roots are rational numbers.

- When the discriminant is not a square number, the roots are irrational numbers. When you are asked to give exact values of the roots (solutions), you have to make sure you leave the irrational answers in radical form and simplify the roots as much as possible.

Example1: Determine the nature of the roots for $y = 3x^2 + 1.5x - 1.5$

Example 2: How many solutions does $y = -9 - x^2 + 6x$ have? Justify your answer.

Example 3: What is the nature of the zeros for $y = 2x^2 + 4x + 7$

Example 4:
What value of "k" would ensure two real roots for the equation $y = kx^2 + 7x - 8$?