Algebra

Roots of the quadratic equation

Determine the nature of roots of the following quadratic equations. I.

(i) (x-1)(2x-5) = 0

Solution:

$$2x^{2} - 7x + 5 = 0$$
 $a = 2, b = -7, c = 5$
 $\Delta = b^{2} - 4ac = (-7)^{2} - 4 (2) (5)$
 $49 - 40 = 9$, a perfect square

: The roots are real, unequal and rational.



(iii) $3x^2 - 2\sqrt{6x} + 2 = 0$

Solution:

$$a = 3, b = -2\sqrt{6}, c = 2$$

 $\Delta = b^2 - 4ac = (-2\sqrt{6})^2 - 4(3)(2)$
 $= 24 - 24 = 0$

... The roots are real and equal.