

1. For the equation  $5x^2 - 10x + 1 = 0$ , what is the nature of its roots?
2. The roots of the equation  $(x - 1)(x + k) = -4$  are equal.  
Find the values of  $k$ .
3. Is the line  $y = 4x - 1$  a tangent to the curve  $y = 3x^2 - 11x + 5$ ?
4. Given that  $k$  is a real number, show that the roots of the equation  $kx^2 + 3x + 3 = k$  are always real.
5. Solve  $x^2 - x - 6 < 0$