Edexcel AS Mathematics Equations and inequalities

Topic assessment

1. Solve the following sets of simultaneous equations.

   (i) $2x + 3y = -7$
         $5x - 2y = 11$ [4]

   (ii) $3x - 2y = 3$
         $y = 1 - 2x$ [4]

   (iii) $x + 2y = 13$
         $x^2 - y^2 = 9$ [6]

2. Solve the following inequalities.

   (i) $2x + 3 < 1 - x$ [2]

   (ii) $3(y - 1) \geq 5y - 8$ [3]

3. Solve the following inequalities.

   (i) $x^2 + 2x - 15 \leq 0$ [3]

   (ii) $2p^2 - 7p + 3 > 0$ [3]

   (iii) $z(2 - z) < z - 12$ [4]

4. Find the points of intersection of the curves $y = x^2 - 5x + 4$ and $y = 2 - x^2$.
   Sketch both these curves on one diagram and label the points of intersection.
   Show by shading the region for which both $y \leq x^2 - 5x + 4$ and $y \leq 2 - x^2$.
   [6]

5. The quadratic equation $x^2 + (3k + 1)x - k = 0$ has no real roots.
   Find the possible set of values for k. [5]

Total 40 marks