HARDER QUADRATIC SIMULTANEOUS EQUATIONS

Task 1 – Solve each of the following equations. You must show clear algebraic working. Do not use trial and error.

1) $2x^2 + y^2 - 2xy = 8$
$y = x + 2$

2) $x^2 - 4y + 2x = 2y^2 + 2$
$x = y - 1$

3) $x + y - 2 = 0$
$x^2 + y^2 + 2xy - 4x = 4 - x^2$

Task 2

4) **The line L with equation $3x + y - 6 = 0$ intersects the curve C, with equation $x^2 + y^2 - 4x - 2y = 0$. Work out the coordinates of the points of intersection.**

5) **The line L with equation $x - 2y + 5 = 0$, intersects the curve C, with equation $x^2 + y^2 + 4x - 2y = -3$. Work out the coordinates of the points of intersection.**

6) **The line L with equation $x - 2y = 1$,intersects the curve C, with equation $(x - 3)^2 + (y + 1)^2 = 5$. Work out the coordinates of the points of intersection.**

Challenge

7) **Solve the equations:**
$2x - 3y + 6 = 0$
$2x^2 + y^2 - 4xy + 4x = 6$
Do not use trial and improvement. You must show clear algebraic working.

8) **The line L with equation $y = \frac{x}{2} - 1$, intersects the curve C, with equation $x^2 + y^2 = 2xy + 4$ at two points. Work out the length of the line segment joining these points.**