Harder Simultaneous Equations

(a)

Solve $2x + 3y - 18 = 0$
$x = y + 4$

$x = 6, y = 2$

(b)

Solve $3x + 4y = 8$
$6 - x = 2y$

$x = -4, y = 5$

(c)

Solve $y = x^2 - 2x + 6$
$y = x + 4$

$x = 2, y = 6$
or
$x = 1, y = 5$

(d)

Solve $x^2 + y^2 = 50$
$y = x - 8$

$x = 7, y = -1$
or
$x = 1, y = -7$

(e)

Solve $x^2 - 5x = y - 5$
$2x + y = 5$

$x = 0, y = 5$
or
$x = 3, y = -1$

(f)

Solve $x^2 + 2y^2 = 22$
$3x = 2y$

$x = -2, y = -3$
or
$x = 2, y = 3$

(g)

Solve $x^2 + y^2 + xy = 12$
$x = 6 - 2y$

$x = -2, y = 4$
or
$x = 2, y = 2$

(h)

Solve $y = x^2 + 3x - 5$
$x - y = 4$

$x = -1 + \sqrt{2}, y = -5 + \sqrt{2}$
or
$x = -1 - \sqrt{2}, y = -5 - \sqrt{2}$

(i)

Find the coordinates of the points where the curve $y = 2x^2 - 3x - 4$ intersects with the line $y = 2x - 1$

$\left(-\frac{1}{2}, -2\right)$ and $(3, 5)$

(j)

Solve $xy = 16$
$x + y = 10$

$x = 8, y = 2$
or
$x = 2, y = 8$

(k)

Solve $x + 2y = 5$
$(x - 1)^2 + (y - 2)^2 = 20$

$x = 5, y = 0$
or
$x = -3, y = 4$

(l)

Find the length of the line joining the points of intersection of $y = \frac{x}{2} + 1$ and $x^2 + y^2 = xy + 4$

$(-2, 0)$ and $(2, 2)$
Distance $2\sqrt{5}$