Quadratic Simultaneous Equations (A)

Solve the equations $-x + y = 6$ and $x^2 + 2x - 2y = -11$

$y = x + 6$

$x^2 + 2x - 2(x + 6) = -11$

$x^2 + 2x - 2x - 12 = -11$

$x^2 - 1 = 0$

$(x + 1)(x - 1) = 0$

$x = -1, 1$

When $x = -1$, $y = -1 + 6 = 5$

When $x = 1$, $y = 1 + 6 = 7$

$(-1, 5)$ and $(1, 7)$

Solve the equations $-2x + y = 5$ and $2x^2 - 6x - y = 5$

$y = 2x + 5$

$2x^2 - 6x - (2x + 5) = 5$

$2x^2 - 6x - 2x - 5 = 5$

$2x^2 - 8x - 10 = 0$

$x^2 - 4x - 5 = 0$

$(x - 5)(x + 1) = 0$

$x = -1, 5$

When $x = -1$, $y = 2(-1) + 5 = -2 + 5 = 3$

When $x = 5$, $y = 2(5) + 5 = 10 + 5 = 15$

$(-1, 3)$ and $(5, 15)$