4 $y = 1 + x - x^2$ at the point $(-2, -5)$

$y = 1 + x - x^2$

$\frac{dy}{dx} = 1 - 2x \quad \therefore \frac{dy}{dx} = -2x + 1$

$\frac{dy}{dx}\Big|_{x=-2}$

$-2(-2) + 1$

$4 + 1 = 5 \quad \therefore m = 5$

$\therefore m = 5, \; x_1 = -2, \; y_1 = -5$

where $y - y_1 = m(x - x_1)$

$y - (-5) = 5(x - (-2))$

$y + 5 = 5(x + 2)$

$y + 5 = 5x + 10$

$y + 5x + 5 - 10 = 0$

$\therefore y - 5x - 5 = 0$ is the equation of the tangent

for the equation of the normal

$m_1 m_2 = -1$

$\frac{5}{5} m_2 = -\frac{1}{5}$

$m_2 = -\frac{1}{5}$

$y - y_1 = m(x - x_1)$