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

Solu

$x_1 = -2$

$y_1 = -5$

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

$\left.\frac{dy}{dx}\right|_{x=2} = 1 - 2(-2) = 1 + 4 = 5 \therefore m = 5$

for tangent

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

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

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

$y + 5 = 5x + 10$

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

$y - 5x - 5 = 0$ (equ of tangent

for normal

$y - y_1 = -\frac{1}{m}(x - x_1)$

$y - (-5) = -\frac{1}{5}(x - (-2))$

$y + 5 = -\frac{1}{5}(x + 2)$

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

$5y + 25 = -x - 2$

$5y + x + 25 + 2 = 0$

$5y + x + 27 = 0$ (equn of normal)