

9. If $f(x) = x^2 + kx$ and $f'(-1)$ is 3, find the value of k .

$$f(x) = x^2 + kx$$

$$f'(x) = 2x + k$$

$$f'(-1) = 3$$

$$2(-1) + k = 3$$

$$-2 + k = 3$$

$$k = 5$$

13. Find the slope and hence the equation of the tangent to the curve $y = 6 + x - x^2$ at the point $(2, 4)$.

$$\text{Slope} = \frac{dy}{dx}$$

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

$$\text{at } (2, 4)$$

$$x = 2$$

$$\frac{dy}{dx}_{x=2} = 1 - 2(2) = -3$$

$$\text{Tangent ?}$$

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

$$m = -3$$

$$\text{pt } (2, 4)$$

$$y - 4 = -3(x - 2)$$

$$y - 4 = -3x + 6$$

$$3x + y - 10 = 0$$