

126) (b) (i) $y = 9 - x^2$ crosses x axis when $y = 0$
 $0 = 9 - x^2$
 $x^2 = 9$
 $x = \pm 3$

$\therefore P(3, 0) \quad \therefore a = 3$

(ii) Now tangent gradient is $\frac{dy}{dx} = -2x$

At $P(3, 0) \quad \frac{dy}{dx} = -2(3)$
 $\frac{dy}{dx} = -6$

$\therefore$ Equation of tangent is $y - y_1 = m(x - x_1)$
 $y - 0 = -6(x - 3)$
 $y = -6x + 18$

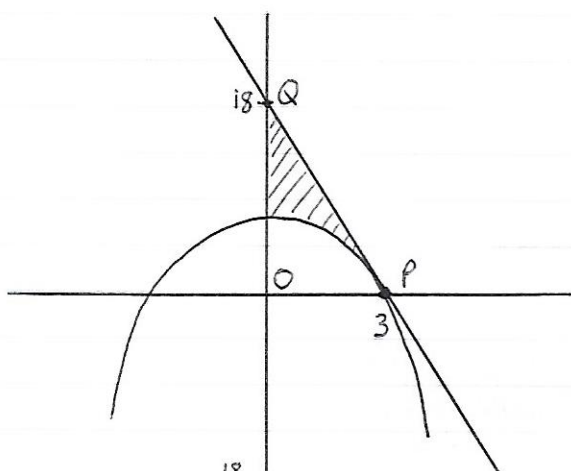
$\therefore$ Tangent crosses y axis when $x = 0$

$y = -6(0) + 18$

$\therefore Q(0, 18) \quad y = 18$

$\therefore b = 18$

(iii)



Area $\therefore = \int_0^3 (18 - 6x) dx - \int_0^3 (9 - x^2) dx$
 $= \frac{bh}{2} - \int_0^3 (9 - x^2) dx$
 $= \frac{3 \times 18}{2} - \left[9x - \frac{x^3}{3} \right]_0^3$
 $= 27 - [(27 - 9) - (0 - 0)]$
 $= 27 - [18]$
 $= 9 \text{ units}^2$