18 $y = 4x + 12$, $y = x^2$

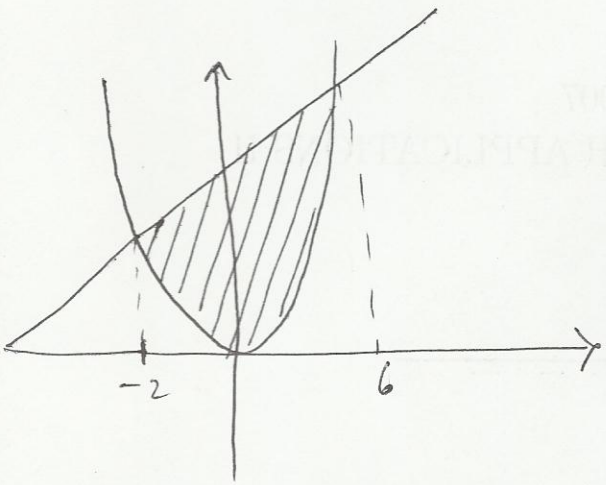
Where do they intersect? 6

$4x + 12 = x^2$

$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$x = 6, -2$



Find the area of the shaded region

$$= \int_{-2}^{6} (4x+12) - x^2 \, dx$$

$$= \int_{-2}^{6} 4x \, dx + \int_{-2}^{6} 12 \, dx - \int_{-2}^{6} x^2 \, dx$$

$$= 2x^2 \Big|_{-2}^{6} + 12x \Big|_{-2}^{6} - \frac{x^3}{3} \Big|_{-2}^{6}$$

$$= 2.6^2 - 2.(-2)^2 + 12.6 - 12(-2) - \left[\frac{6^3}{3} - \frac{(-2)^3}{3} \right]$$

$$= (72 - 8) + (72 + 24) - \left(72 + \frac{8}{3}\right)$$

$$= 64 + 96 - \frac{224}{3}$$

$$= 160 - \frac{224}{3}$$

$$= \frac{256}{3} = \boxed{85.33}$$