

# MEI Pure Mathematics Core 1

## Co-ordinate geometry

Ex 2F

⑤ i)  $y = x^2 + 6x - 5$  intersects  $y = 2x$  where

$$2x = x^2 + 6x - 5$$

(sub for  $y$  from line to curve)

$$x^2 + 4x - 5 = 0$$

$$\left. \begin{array}{l} x = -5 \\ y = -10 \end{array} \right\} \text{ or } \left. \begin{array}{l} x = 1 \\ y = 2 \end{array} \right\}$$

ii)  $y = x^2 + 6x + 5$  should intersect  $y = 2x$  where

$$2x = x^2 + 6x + 5$$

$$x^2 + 4x + 5 = 0$$

a                    b                    c

$$\begin{aligned} \text{However } b^2 - 4ac & \text{ (the discriminant)} \\ &= 16 - 4 \times 1 \times 5 \\ &= -4 \end{aligned}$$

$\therefore$  Eqn<sup>n</sup> has no real roots and  $y = 2x$

does not intersect  $y = x^2 + 6x + 5$