

$$4a) \quad |x-1| \geq 3$$

$$x-1 \geq 3$$

$$x \geq 4$$

and

$$-(x-1) \geq 3$$

and

$$-x+1 \geq 3$$

$$-x \geq 2$$

$$x \leq -2$$



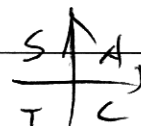
$$b) \quad \cos \theta = \frac{3}{5} = 0$$

$$\text{Where } 0^\circ \leq \theta \leq 360^\circ$$

$$\cos \theta = \frac{3}{5}$$

$$\theta = 66^\circ 25'$$

$$= 66^\circ \text{ (nearest degree)}$$

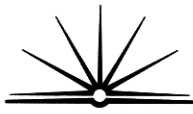


$$\therefore \theta = 360^\circ - 66^\circ 25' = 293^\circ 34'$$

$$\text{and also } 360^\circ - \theta = 360^\circ - 66^\circ 25' = 293^\circ 34'$$

$$\therefore \theta = 66^\circ 25' \quad \text{and} \quad 293^\circ 34' \text{ (293.575)}$$

$$\theta = 66^\circ \quad \text{and} \quad 294^\circ$$



$$c) \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$MN=a \quad a^2 = 5.2^2 + 8.9^2 - (2 \times 5.2 \times 8.9 \times \cos 110^\circ)$$

$$a^2 = 106.25 - (92.56 \cos 110)$$

$$= 106.25 - (-31.657)$$

$$a^2 = 137.907$$

$$a = \sqrt{137.907}$$

$$a = 11.743$$

$$MN = 11.743 \quad (3dp)$$

$$i) \quad \text{area of triangle} = \frac{1}{2}bc \sin A$$

$$= \frac{1}{2} \times 5.2 \times 8.9 \times \sin 110^\circ$$

$$= 23.14 \sin 110$$

$$\text{area of } \triangle LMN = 21.744 \text{ unit}^2 \quad (3dp)$$

$$d:) \quad y = 6x - x^2 \quad y = 2x$$

$$6x - x^2 = 2x$$

$$0 = x^2 + 2x - 6x$$

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

$$0 = x(x - 4)$$

$$\therefore x = 0 \quad \text{and} \quad x = 4$$

$$\begin{array}{l} \text{sub } x=0 \\ y=0 \end{array} \quad \text{into } y=2x$$

$$A = (0, 0)$$

$$\begin{array}{l} \text{sub } x=4 \\ y=8 \end{array} \quad \text{into } y=2x$$

$$\therefore B (4, 8)$$

$$\therefore \int_0^4 (6x - x^2) - (2x) \, dx \quad = \text{shaded Area}$$

$$= \int_0^4 4x - x^2 \, dx$$

$$= \left[\frac{4}{2}x^2 - \frac{x^3}{3} \right]_0^4$$

$$= \left[2x^2 - \frac{x^3}{3} \right]_0^4$$

$$= \left[\left(2 \times (4)^2 - \frac{(4)^3}{3} \right) - \left(2 \times 0^2 - \frac{0^3}{3} \right) \right]$$

$$= 2 \times 16 - \frac{64}{3}$$

$$= 10\frac{2}{3}$$

$$\therefore \text{shaded area} = 10\frac{2}{3} \text{ unit}^2$$