



Question 4.

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

$x-1 \geq 3$

$x \geq 4$

~~$|x-1| \geq 3$~~
 ~~$x-1 \geq 3$~~
 ~~$x \geq 4$~~

~~$-x+1 \geq 3$~~
 ~~$-x \geq 2$~~
 ~~$x \leq -2$~~

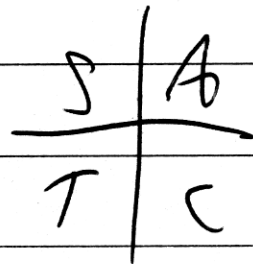
b) $0^\circ \leq \theta \leq 360^\circ$

$\cos \theta - \frac{2}{5} = 0$

$\cos \theta = \frac{2}{5}$

$\theta = 66^\circ$

and $\theta = 294^\circ$



c) ΔMN

$\frac{9}{\sin A} = \frac{6}{\sin B} = \frac{c}{\sin C}$

~~$\frac{8}{\sin 10^\circ} = \frac{c}{\sin 110^\circ}$~~
 ~~$8.9 = \frac{c}{\sin 110^\circ} \times \sin 10^\circ$~~

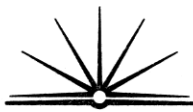
$\frac{m}{\sin M} = \frac{4}{\sin L} = \frac{n}{\sin N}$

$\frac{8.9}{\sin 4} = \frac{c}{\sin 110^\circ} = \frac{5.2}{\sin N}$

$BLMN = 21.75m$

~~$A = \frac{1}{2} ab \sin C$~~
 ~~$21.75 = \frac{1}{2} ($~~

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$$ii) A = \frac{1}{2} ab \sin C$$

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

$$= 21.75 \text{ m}^2$$

$$d) i) \text{ ~~given~~ } y = 6x - x^2 \quad y = 2x$$

$$y = 6x - x^2 \quad \text{--- ①}$$

$$y = 2x \quad \text{--- ②}$$

$$\text{when } y = 8 \quad \text{--- ③} \quad 8 = 2x$$

$$x = 4$$

$$\text{①-②} \quad 4x - x^2 = 0$$

$$\text{∴ when } x = 4 \quad y = 6(4) - (4)^2$$

$$= 24 - 16$$

$$= 8$$

$$\therefore \text{pt } B(4, 8)$$

$$ii) \int 6x - x^2 - \int 2x$$

$$= \left[\frac{6x^2}{2} - \frac{x^3}{3} \right] - \frac{2x^2}{2}$$

$$= \left[3x^2 - \frac{1}{3}x^3 - x^2 \right]_0^4$$

$$= 3(4)^2 - \frac{1}{3}(4)^3 - (4)^2 - 0$$

$$= 48 - 2\frac{1}{3} - 16 - 0$$

$$= 10\frac{2}{3} \text{ units}^2$$