

(16) cont

$$(II) + (IV) + (VI)$$

$$2(y_1 + y_2 + y_3) = 5 + 6 + 7$$

$$\Rightarrow y_1 + y_2 + y_3 = \frac{18}{2} = 9$$

$$\Rightarrow y_1 + y_2 + y_3 = 9 \dots (VIII)$$

using (II)

$$5 + y_3 = 9$$

$$\Rightarrow y_3 = 9 - 5 = 4$$

from (IV) and (VIII)

$$y_1 + 6 = 9$$

$$\Rightarrow y_1 = 3$$

from (VI) and (VIII)

$$y_2 + 7 = 9$$

$$\Rightarrow y_2 = 9 - 7 = 2$$

$$\therefore x_1 = -4, x_2 = 3, x_3 = 11$$

$$y_1 = 3, y_2 = 2, y_3 = 4$$

$$\therefore A(-4, 3), B(3, 2), C(11, 4)$$

ar(ΔABC)

$$= \frac{1}{2} \begin{vmatrix} 3 & 2 \\ 11 & 4 \\ -4 & 3 \\ 3 & 2 \end{vmatrix}$$

$$= \frac{1}{2} |12 - 22 + 33 + 16 - 8 - 9|$$

$$= \frac{1}{2} |61 - 39|$$

$$= \frac{1}{2} \times 22$$

$$= 11 \text{ sq. units}$$