

$$9 \text{ (iv)} \quad \frac{1}{2x} - \frac{1}{y} = -1$$

$$\frac{1}{x} + \frac{1}{2y} = 8 \quad x, y \neq 0$$

$$\text{Let } \frac{1}{x} = a, \frac{1}{y} = b$$

$$\frac{a}{2} - b = -1 \dots \text{ (i)} \times \frac{1}{2}$$

$$a + \frac{b}{2} = 8 \dots \text{ (ii)} \times 1$$

$$\text{(i)} \times \frac{1}{2} + \text{(ii)} \times 1$$

$$\frac{a}{4} - \frac{b}{2} = -\frac{1}{2}$$

$$a + \frac{b}{2} = 8$$

$$\frac{5a}{4} = \frac{15}{2}$$

$$\Rightarrow a = \frac{15}{2} \times \frac{4}{5}$$

$$= 6$$

Sub in (i)

$$\frac{6}{2} - b = -1$$

$$\Rightarrow -b = -1 - 3$$

$$\Rightarrow b = 4$$

$$\therefore a = 6, \quad b = 4$$

$$\frac{1}{x} = 6 \quad \frac{1}{y} = 4$$

$$\Rightarrow x = \frac{1}{6} \quad \Rightarrow y = \frac{1}{4}$$

$$9 \text{ (v)} \quad 43x + 67y = -24 \dots \text{ (i)}$$

$$67x + 43y = 24 \dots \text{ (ii)}$$

$$\text{(i)} + \text{(ii)}$$

$$110x + 110y = 0$$

$$\div 110 \quad x + y = 0 \dots \text{ (iii)}$$

$$\text{(i)} - \text{(ii)}$$

$$-24x + 24y = -48$$

$$(\div 24) \quad -x + y = -2 \dots \text{ (iv)}$$

$$\text{(iii)} + \text{(iv)}$$

$$x + y = 0$$

$$-x + y = -2$$

$$2y = -2$$

$$\Rightarrow y = -1$$

Sub (i)

$$x - 1 = 0$$

$$\Rightarrow x = 1$$

$$\therefore x = 1, \quad y = -1$$