**1(i)**

$$\frac{1}{2x} + \frac{1}{3y} = 2 \cdots ①$$

$$\frac{1}{3x} + \frac{1}{2y} = \frac{13}{6} \cdots ②$$

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

① becomes

$$\frac{a}{2} + \frac{b}{3} = 2$$

(×6)

$$3a + 2b = 12 \cdots ③$$

② becomes

$$\frac{a}{3} + \frac{b}{2} = \frac{13}{6}$$

(×6)

$$2a + 3b = 13 \cdots ④$$

③×2 − ④×3

$$6a + 4b = 24$$
$$6a + 9b = 39$$
$$\overline{\phantom{6a}} \quad \overline{\phantom{+9b}} \quad \overline{\phantom{=39}}$$

$$-5b = -15$$

$$\Rightarrow b = \frac{15}{5}^3$$

$$\Rightarrow b = 3$$

Sub ④,

$$2a + 3 \times \frac{1}{3} = 13$$

$$\Rightarrow 2a = 13 - 1$$

$$\Rightarrow a = \frac{12}{2}^6$$

| $a = 6$ | $b = 3$ |
|---------|---------|
| $\frac{1}{x} = 6$ | $\frac{1}{y} = 3$ |
| $\Rightarrow x = \frac{1}{6}$ | $y = \frac{1}{3}$ |

**1(ii)**

$$\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2$$

$$\frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$$

Put $\frac{1}{\sqrt{x}} = a$, $\frac{1}{\sqrt{y}} = b$

$$2a + 3b = 2 \cdots ① \quad \times 3$$
$$4a - 9b = -1 \cdots ② \quad \times 1$$

①×3 + ②×1

$$6a + 9b = 6$$
$$4a - 9b = -1$$
$$\overline{\phantom{xxxxxxxxxxx}}$$
$$10a = 5$$

$$\Rightarrow a = \frac{5}{10}^1{}_2$$

$$\Rightarrow a = \frac{1}{2}$$

Sub ①

$$2 \times \frac{1}{2} + 3b = 2$$

$$\Rightarrow 3b = 2 - 1$$

$$\Rightarrow b = \frac{1}{3}$$

| $a = \frac{1}{2}$ | $b = \frac{1}{3}$ |
|---------|---------|
| $\frac{1}{\sqrt{x}} = \frac{1}{2}$ | $\frac{1}{\sqrt{y}} = \frac{1}{3}$ |
| $\Rightarrow \sqrt{x} = 2$ | $\Rightarrow \sqrt{y} = 3$ |
| $\Rightarrow x = 4$ | $\Rightarrow y = 9$ |