

$$1. (1) (x, y) = (4, 4) + t(-1, -3)$$

$$= (4 - t, 4 - 3t)$$

$$\begin{cases} x = 4 - t \rightarrow t = 4 - x \\ y = 4 - 3t \leftarrow \text{代入} \end{cases}$$

$$y = 4 - 3(4 - x)$$

$$y = 3x - 8 \quad \underline{3x - y - 8 = 0}$$

$$(2) (x, y) = (2, -1) + t(-3, 2)$$

$$= (2 - 3t, -1 + 2t)$$

$$\begin{cases} x = 2 - 3t \rightarrow t = \frac{2-x}{3} \\ y = -1 + 2t \leftarrow \text{代入} \end{cases}$$

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

$$3y = -3 + 2(2-x)$$

$$3y = -2x + 1 \quad \curvearrowright \quad \underline{2x + 3y - 1 = 0}$$

2.

$$(1) (x, y) = (1-t)(1, 2) + t(2, 3)$$

$$= (t+1, t+2)$$

$$\begin{cases} x = t+1 \\ y = t+2 \end{cases}$$

$$(2) (x, y) = (1-t)(10, 3) + t(-3, 4)$$

$$= (-13t+10, t+3)$$

$$\begin{cases} x = -13t+10 \\ y = t+3 \end{cases}$$

$$3. (1) 5(x-2) + 3(y-4) = 0$$

$$\underline{5x + 3y - 22 = 0}$$

$$(2) -3(x+4) - (y+1) = 0$$

$$-3x - y - 13 = 0$$

$$\underline{3x + y + 13 = 0}$$

4.

$$(1) x + \sqrt{3}y - 1 = 0 \text{ の法線 } \vec{m} = (1, \sqrt{3})$$

$$x - \sqrt{3}y + 4 = 0 \quad \text{''} \quad \vec{n} = (1, -\sqrt{3})$$

$$|\vec{m}| = 2, \quad |\vec{n}| = 2, \quad \vec{m} \cdot \vec{n} = -2 \text{ より}$$

$$\cos \theta = \frac{-2}{2 \cdot 2} = -\frac{1}{2}$$

$$\theta = 120^\circ$$

$$\text{よって } 180^\circ - 120^\circ = \underline{60^\circ}$$

$$(2) 2x + 3y + 1 = 0 \text{ の法線 } \vec{m} = (2, 3)$$

$$3x - 2y - 4 = 0 \quad \text{''} \quad \vec{n} = (3, -2)$$

$$|\vec{m}| = \sqrt{13}, \quad |\vec{n}| = \sqrt{13}, \quad \vec{m} \cdot \vec{n} = 0$$

$$\text{これより } \underline{90^\circ}$$