

71. 点と直線の距離

$$(1) 4 \quad (2) \frac{68}{13} \quad (3) \frac{\sqrt{10}}{20} \quad (4) 0 \quad (5) \frac{2\sqrt{10}}{10} \quad (6) \frac{3\sqrt{2}}{2}$$

次の点と直線の距離を求めよ。

(1) $(0, 0)$, $5x - 12y + 52 = 0$

$$\frac{|5 \cdot 0 - 12 \cdot 0 + 52|}{\sqrt{5^2 + (-12)^2}} = \frac{52}{13} = 4$$

(2) $(8, 2)$, $5x - 12y + 52 = 0$

$$\frac{|5 \cdot 8 - 12 \cdot 2 + 52|}{\sqrt{5^2 + (-12)^2}} = \frac{68}{13}$$

(3) $(-2, 5)$, $4x + 3y = 2$

$$4x + 3y = 2 \Leftrightarrow 4x + 3y - 2 = 0$$

$$\frac{|4 \cdot (-2) + 3 \cdot 5 - 2|}{\sqrt{4^2 + (-3)^2}} = \frac{|-2|}{4\sqrt{10}} = \frac{1}{2\sqrt{10}} = \frac{\sqrt{10}}{20}$$

(4) $(3, 11)$, $2x - y + 5 = 0$

$$\frac{|2 \cdot 3 - 11 + 5|}{\sqrt{2^2 + (-1)^2}} = \frac{0}{\sqrt{5}} = 0$$

(5) $(1, 2)$, $y = 3x + 1$

$$y = 3x + 1 \Leftrightarrow 3x - y + 1 = 0$$

$$\frac{|3 \cdot 1 - 2 + 1|}{\sqrt{3^2 + (-1)^2}} = \frac{2}{\sqrt{10}} = \frac{2\sqrt{10}}{10}$$

(6) $(1, -2)$, $y = x$

$$y = x \Leftrightarrow x - y = 0$$

$$\frac{|1 - (-2)|}{\sqrt{1^2 + (-1)^2}} = \frac{3}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$$