

微分法と積分法 1 微分係数

394

(1)

$$\begin{aligned}\lim_{x \rightarrow -1} (x^2 + x) &= (-1)^2 + (-1) \\ &= 0\end{aligned}$$

(2)

$$\begin{aligned}\lim_{x \rightarrow -2} (x^2 + 1)(x - 1) &= \{(-2)^2 + 1\} \{(-2) - 1\} \\ &= -15\end{aligned}$$

(3)

$$\begin{aligned}\lim_{x \rightarrow -1} \frac{x^2 + 1}{x - 2} &= \frac{(-1)^2 + 1}{-1 - 2} \\ &= -\frac{2}{3}\end{aligned}$$

(4)

$$\begin{aligned}\lim_{x \rightarrow 1} \frac{x^3 - 1}{x - 1} &= \lim_{x \rightarrow 1} \frac{(x - 1)(x^2 + x + 1)}{x - 1} \\ &= \lim_{x \rightarrow 1} (x^2 + x + 1) \\ &= 1^2 + 1 + 1 \\ &= 3\end{aligned}$$

(5)

$$\begin{aligned}\lim_{x \rightarrow 2} \frac{x^2 - x - 2}{x^2 + x - 6} &= \lim_{x \rightarrow 2} \frac{(x + 1)(x - 2)}{(x + 3)(x - 2)} \\ &= \lim_{x \rightarrow 2} \frac{x + 1}{x + 3} \\ &= \frac{2 + 1}{2 + 3} \\ &= \frac{3}{5}\end{aligned}$$

(6)

$$\begin{aligned}\lim_{x \rightarrow -3} \frac{1}{x + 3} \left(\frac{12}{x - 3} + 2 \right) &= \lim_{x \rightarrow -3} \left\{ \frac{1}{x + 3} \cdot \frac{2(x + 3)}{x - 3} \right\} \\ &= \lim_{x \rightarrow -3} \frac{2}{x - 3} \\ &= \frac{2}{-3 - 3} \\ &= -\frac{1}{3}\end{aligned}$$