

# 問題

問題 1. 次の関数を微分せよ。

(1)  $y = \sin 5x$

(2)  $y = \cos 3x$

(3)  $y = 2 \cos(2x + \frac{\pi}{3})$

(4)  $y = 3\sqrt{2} \sin(3x - \frac{\pi}{6})$

(5)  $y = \sin^3 x$

(6)  $y = \cos^4 x$

(7)  $y = \tan 4x$

(8)  $y = \tan^3 x$

(9)  $y = \frac{1}{\cos x}$

(10)  $y = \frac{3}{\tan x}$

(11)  $y = \sin^3 2x$

(12)  $y = \cos^2 4x$

問題 2. 次の関数を微分せよ。

(1)  $y = x \sin x + \sin x$

(2)  $y = x \cos x + 2x$

(3)  $y = x \cos x - x$

(4)  $y = x \sin x - \cos x$

## 練習

練習 1. 次の関数を微分せよ。

(1)  $y = \sin 4x$

(2)  $y = \cos 6x$

(3)  $y = 4 \cos(3x + \frac{\pi}{6})$

(4)  $y = 2\sqrt{2} \sin(2x - \frac{\pi}{4})$

(5)  $y = \sin^4 x$

(6)  $y = \cos^3 x$

(7)  $y = \tan 2x$

(8)  $y = \tan^4 x$

(9)  $y = \frac{2}{\tan x}$

(10)  $y = \frac{3}{\sin x}$

(11)  $y = \sin^2 4x$

(12)  $y = \cos^3 2x$

練習 2. 次の関数を微分せよ。

(1)  $y = x \sin x - \sin x$

(2)  $y = x \sin x - 2x$

(3)  $y = x \cos x + x$

(4)  $y = x \cos x + \cos x$

# 解答

問題 1.

$$(1) y' = 5 \cos 5x \quad (2) y' = -3 \sin 3x \quad (3) y' = -4 \sin\left(2x + \frac{\pi}{3}\right)$$

$$(4) y' = 9\sqrt{2} \cos\left(3x - \frac{\pi}{6}\right) \quad (5) y' = 3 \sin^2 x \cos x \quad (6) y' = -4 \sin x \cos^3 x$$

$$(7) y' = \frac{4}{\cos^2 4x} \quad (8) y' = \frac{3 \tan^2 x}{\cos^2 x} \quad (9) y' = \frac{\sin x}{\cos^2 x} \quad (10) y' = -\frac{3}{\sin^2 x}$$

$$(11) y' = 6 \sin^2 2x \cos 2x \quad (12) y' = -4 \sin 8x$$

問題 2.

$$(1) y' = x \cos x + \sin x + \cos x \quad (2) y' = -x \sin x + \cos x + 2$$

$$(3) y' = -x \sin x + \cos x - 1 \quad (4) y' = x \cos x + 2 \sin x$$

練習 1.

$$(1) y' = 4 \cos 4x \quad (2) y' = -6 \sin 6x \quad (3) y' = -12 \sin\left(3x + \frac{\pi}{6}\right)$$

$$(4) y' = 4\sqrt{2} \cos\left(2x - \frac{\pi}{4}\right) \quad (5) y' = 4 \sin^3 x \cos x \quad (6) y' = -3 \sin x \cos^2 x$$

$$(7) y' = \frac{2}{\cos^2 2x} \quad (8) y' = \frac{4 \tan^3 x}{\cos^2 x} \quad (9) y' = -\frac{2}{\sin^2 x} \quad (10) y' = -\frac{3 \cos x}{\sin^2 x}$$

$$(11) y' = 4 \sin 8x \quad (12) y' = -6 \sin 2x \cos^2 2x$$

練習 2.

$$(1) y' = x \cos x + \sin x - \cos x \quad (2) y' = x \cos x + \sin x - 2$$

$$(3) y' = -x \sin x + \cos x + 1 \quad (4) y' = -x \sin x - \sin x + \cos x$$