

問題

問題 1. 次の関数を微分せよ。

(1) $y = \sqrt[3]{x}$

(2) $y = \sqrt[8]{x}$

問題 2. 次の関数を微分せよ。

(1) $y = \sqrt[5]{x^2}$

(2) $y = \sqrt[8]{x^3}$

(3) $y = \frac{1}{\sqrt[4]{x}}$

(4) $y = \frac{1}{\sqrt[6]{x}}$

問題 3. 次の関数を微分せよ。

(1) $y = \sqrt[4]{(x+3)^3}$

(2) $y = \sqrt[3]{(x-1)^2}$

(3) $y = \sqrt{x^2+1}$

(4) $y = \sqrt[4]{x^2+4}$

(5) $y = \sqrt[3]{9-x^2}$

(6) $y = \sqrt{1-x^2}$

練習

練習 1. 次の関数を微分せよ。

$$(1) y = \sqrt[5]{x}$$

$$(2) y = \sqrt[7]{x}$$

練習 2. 次の関数を微分せよ。

$$(1) y = \sqrt[6]{x^5}$$

$$(2) y = \sqrt[7]{x^2}$$

$$(3) y = \frac{1}{\sqrt[3]{x}}$$

$$(4) y = \frac{1}{\sqrt[5]{x}}$$

練習 3. 次の関数を微分せよ。

$$(1) y = \sqrt[5]{(x+4)^2}$$

$$(2) y = \sqrt[4]{(x-3)^3}$$

$$(3) y = \sqrt{x^2+3}$$

$$(4) y = \sqrt[5]{x^2+5}$$

$$(5) y = \sqrt[4]{4-x^2}$$

$$(6) y = \sqrt{9-x^2}$$

解答

問題 1.

$$(1) y' = \frac{1}{3\sqrt[3]{x^2}} \quad (2) y' = \frac{1}{8\sqrt[8]{x^7}}$$

問題 2.

$$(1) y' = \frac{2}{5\sqrt[5]{x^3}} \quad (2) y' = \frac{3}{8\sqrt[8]{x^5}} \quad (3) y' = -\frac{1}{4x\sqrt[4]{x}} \quad (4) y' = -\frac{1}{6x\sqrt[6]{x}}$$

問題 3.

$$(1) y' = \frac{3}{4\sqrt[4]{x+3}} \quad (2) y' = \frac{2}{3\sqrt[3]{x-1}} \quad (3) y' = \frac{x}{\sqrt{x^2+1}}$$
$$(4) y' = \frac{x}{2\sqrt[4]{(x^2+4)^3}} \quad (5) y' = -\frac{2x}{3\sqrt[3]{(9-x^2)^2}} \quad (6) y' = -\frac{x}{\sqrt{1-x^2}}$$

練習 1.

$$(1) y' = \frac{1}{5\sqrt[5]{x^4}} \quad (2) y' = \frac{1}{7\sqrt[7]{x^6}}$$

練習 2.

$$(1) y' = \frac{5}{6\sqrt[6]{x}} \quad (2) y' = \frac{2}{7\sqrt[7]{x^5}} \quad (3) y' = -\frac{1}{3x\sqrt[3]{x}} \quad (4) y' = -\frac{1}{5x\sqrt[5]{x}}$$

練習 3.

$$(1) y' = \frac{4}{5\sqrt[5]{(x+4)^3}} \quad (2) y' = \frac{3}{4\sqrt[4]{x-3}} \quad (3) y' = \frac{x}{\sqrt{x^2+3}}$$
$$(4) y' = \frac{2x}{5\sqrt[5]{(x^2+5)^4}} \quad (5) y' = -\frac{x}{2\sqrt[4]{(4-x^2)^3}} \quad (6) y' = -\frac{x}{\sqrt{9-x^2}}$$