

§ 2.3.1

問題 A

□ (1) $f(x) = (5x^2 - 3)^5$ $f'(x) = 5(5x^2 - 3)^4 \times 10x = 50x(5x^2 - 3)^4$

(2) $f(x) = \sqrt{x^2 + 4} = (x^2 + 4)^{\frac{1}{2}}$ $f'(x) = \frac{1}{2}(x^2 + 4)^{-\frac{1}{2}} \times 2x = \frac{x}{\sqrt{x^2 + 4}}$

(3) $f(x) = \frac{1}{(3x+2)^2} = (3x+2)^{-2}$ $f'(x) = -2(3x+2)^{-3} \times 3 = -\frac{6}{(3x+2)^3}$

(4) $f(x) = \frac{1}{\sqrt{2x-3}} = (2x-3)^{-\frac{1}{2}}$ $f'(x) = -\frac{1}{2}(2x-3)^{-\frac{3}{2}} \times 2 = -\frac{1}{(2x-3)^{\frac{3}{2}}}$

(5) $f(x) = (x^3 + 3x + 9)^{\frac{3}{2}}$ $f'(x) = \frac{3}{2}(x^3 + 3x + 9)^{\frac{1}{2}} \times (3x^2 + 3) = \frac{9(x^2 + 1)}{2} \sqrt{x^3 + 3x + 9}$

□ (1) $x^2 + y^2 = 2$

$2x + 2y \frac{dy}{dx} = 0$

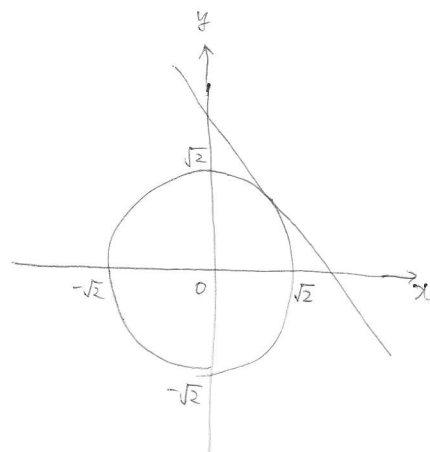
$\therefore \frac{dy}{dx} = -\frac{x}{y} = -\frac{1}{1} = -1$

接線の方程式

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

$= -x + 1$

$\therefore y = -x + 2$



(2) $x^2 + y^2 = 25$

$2x + 2y \frac{dy}{dx} = 0$

$\frac{dy}{dx} = -\frac{x}{y} = -\frac{3}{4}$

接線の方程式は

$y - 4 = -\frac{3}{4}(x - 3)$

$= -\frac{3}{4}x + \frac{9}{4}$

$y = -\frac{3}{4}x + \frac{25}{4}$

