

§ 3.2 関数の定数倍・和・差の微分法

問題 3.2.1

$$g'(x) = \frac{d}{dx}g(x) = \frac{d}{dx}\frac{5\ln x}{3} = \frac{5}{3}\frac{d}{dx}\ln x = \frac{5}{3}\frac{1}{x} = \frac{5}{3x} .$$

問題 3.2.2

$$\frac{dy}{dx} = \frac{d}{dx}(x^2 + \cos x) = \frac{d}{dx}x^2 + \frac{d}{dx}\cos x = 2x - \sin x .$$

問題 3.2.3

$$\frac{d}{dy}(2y^3 - 7y + 4) = \frac{d}{dy}(2y^3) - \frac{d}{dy}(7y) + \frac{d}{dy}4 = 2\frac{d}{dy}y^3 - 7\frac{d}{dy}y + \frac{d}{dy}4 = 2 \cdot 3y^2 - 7 = 6y^2 - 7 .$$

問題 3.2.4

$$\begin{aligned}\varphi'(x) &= \frac{d}{dx}\varphi(x) = \frac{d}{dx}\frac{4\sin x - 3x^2}{5} = \frac{1}{5}\frac{d}{dx}(4\sin x - 3x^2) \\ &= \frac{1}{5}\left(4\frac{d}{dx}\sin x - 3\frac{d}{dx}x^2\right) = \frac{1}{5}(4\cos x - 3 \cdot 2x) \\ &= \frac{4\cos x - 6x}{5} .\end{aligned}$$