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Example

$$\begin{aligned} 1) \quad f(x) &= 3 \cos x \\ f'(x) &= 3 \cdot -\sin x \\ &= -3 \sin x \end{aligned}$$

$$\begin{aligned} 2) \quad f(x) &= \sin x \cdot \cos x \\ f'(x) &= \sin x \cdot -\sin x + \cos x \cdot \cos x \\ &= -\sin^2 x + \cos^2 x \end{aligned}$$

$$\begin{aligned} 3) \quad f(t) &= t \cdot \cos t \\ f'(t) &= t \cdot -\sin t + \cos t \cdot 1 \\ &= -t \sin t + \cos t \end{aligned}$$

$$\begin{aligned} 4) \quad y &= \sin x + \cos x \\ y' &= \cos x - \sin x \end{aligned}$$

$$5) \quad y = 6 \cos(x^2) \quad \begin{array}{l} M = \cos x \\ B = x^2 \end{array}$$

$$\begin{aligned} y' &= 6 \cdot -\sin(x^2) \cdot 2x \\ &= -12x \sin x^2 \end{aligned}$$

$$\begin{aligned} 6) \quad y &= 6 \cos^2 x \quad \begin{array}{l} M = x^2 \\ B = \cos x \end{array} \\ y &= 6 \cdot (\cos x)^2 \end{aligned}$$

$$y' = 6 \cdot 2(\cos x) \cdot -\sin x$$

$$= -12 \cos x \sin x \quad \underline{\underline{=}} \quad -12 \sin x \cos x$$

(pretend ↓)

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Examples

⑦

$$y = 6 \cos^2 x^2 = 6 (\cos x^2)^2 \quad \begin{matrix} M = x^2 \\ B = \cos x^2 \end{matrix}$$

$$y' = 2 \cdot \cos x^2 \cdot -\sin(x^2) \cdot 2x$$

$$M = \cos x$$

$$B = x^2$$

$$= -4x \sin(x^2) \cos(x^2)$$

⑧

$$y = \frac{1 + \sin x}{\cos x}$$

$$y' = \frac{(\cos x)(\cos x) - (1 + \sin x)(-\sin x)}{\cos^2 x}$$

$$= \frac{(\cos^2 x + \sin x + \sin^2 x)}{\cos^2 x}$$

$$= \frac{1 + \sin x}{\cos^2 x}$$

⑨

$$y = \sqrt{\cos x}$$

$$M = x^{1/2}$$

$$B = \cos x$$

$$y' = \frac{1}{2} (\cos x)^{-1/2} \cdot -\sin x$$

$$= \frac{-\sin x}{2\sqrt{\cos x}}$$