

$$f(x) = \begin{array}{ll} \text{(i)} & x \cdot \cos x \\ \text{(ii)} & \log x \\ \text{(iii)} & \frac{x+1}{x-1} \\ \text{(iv)} & \sqrt{\frac{x-1}{x+2}} \end{array} \quad \begin{array}{l} \text{(v)} \ln(\ln x) \\ \text{(vi)} x^x \end{array}$$

$$f'(x) = \text{(i)} \cos x - x \cdot \sin x, \quad x \in \mathbb{R}$$

$$\text{(ii)} \frac{1}{\cos^2 x}, \quad x \neq (2k+1)\frac{\pi}{2}$$

$$\text{(iii)} \frac{-2}{(x-1)^2}, \quad x \neq 1$$

$$\begin{aligned} \text{(iv)} \quad \frac{1}{2\sqrt{\frac{x-1}{x+2}}} \cdot \left(\frac{x-1}{x+2}\right)' &= \frac{3}{2} \sqrt{\frac{x+2}{x-1}} \cdot \frac{1}{(x+2)^2} \\ &= \frac{3}{2\sqrt{(x-1)(x+2)^3}} \end{aligned}$$

$$x < -2 \text{ nebo } x > 1$$

$$\text{(v)} \frac{1}{\ln x} \cdot \frac{1}{x}, \quad x > e$$

$$\text{(vi)} x^x = e^{x \cdot \ln x}$$

$$(x^x)' = x^x (\ln x + 1), \quad x > 0$$