$f(x) =$ (i) $x \cdot \cos x$ (v) $\ln(\ln x)$

(ii) $\operatorname{sgn} x$

(iii) $\frac{x+1}{x-1}$ (vi) x^x

(iv) $\sqrt{\frac{x-1}{x+2}}$

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

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

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

(iv) $\frac{1}{2\sqrt{\frac{x-1}{x+2}}} \cdot \left(\frac{x-1}{x+2}\right)' = \frac{3}{2}\sqrt{\frac{x+2}{x-1}} \cdot \frac{1}{(x+2)^2}$

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

$x < -2$ nebo $x > 1$

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

(vi) $x^x = \exp(x \cdot \ln x)$

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