$f(x)=\dfrac{\ln(x+3)}{x+3}$	$f'(x)=\dfrac{1-\ln(x+3)}{(x+3)^2}$
$f(x)=(\ln(x+3))^2$	$f'(x)=\dfrac{2\ln(x+3)}{x+3}$
$f(x)=1-e^{-x}\left(1+x+\dfrac{x^2}{2}\right)$	$f'(x)=\dfrac{x^2}{2}e^{-x}$
$f(x)=\dfrac{1}{4}xe^{-\frac{x}{2}}$	$f'(x)=\dfrac{1}{8}(2-x)e^{-\frac{x}{2}}$

$$(\ln(x+3))' = \frac{u'}{u} = \frac{1}{x+3}$$

$$f(x) = \frac{\ln(x+3)}{x+3}$$

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

$$f(x) = (\ln(x+3))^2$$

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

$$f(x) = 1 - e^{-x}\left(1+x+\frac{x^2}{2}\right)$$

$$f'(x) = 0 - \left[-e^{-x}\left(1+x+\frac{x^2}{2}\right) + e^{-x}(1+x)\right] = e^{-x}\left(1+x+\frac{x^2}{2}\right) - e^{-x}(1+x)$$

$$= e^{-x}\left[\left(1+x+\frac{x^2}{2}\right)-(1+x)\right] = e^{-x}\times\frac{x^2}{2} = \frac{x^2e^{-x}}{2}$$

$$f(x) = \frac{1}{4}xe^{-\frac{x}{2}}$$

$$f'(x) = \frac{1}{4}\times e^{-\frac{x}{2}} + \frac{1}{4}x\times\left(-\frac{1}{2}e^{-\frac{x}{2}}\right) = \frac{1}{4}e^{-\frac{x}{2}} - \frac{1}{8}xe^{-\frac{x}{2}} = e^{-\frac{x}{2}}\left(\frac{1}{4}-\frac{1}{8}x\right)$$

$$= e^{-\frac{x}{2}}\left(\frac{2}{8}-\frac{1}{8}x\right)$$

$$= e^{-\frac{x}{2}}\left(\frac{2-x}{8}\right) = \frac{1}{8}(2-x)e^{-\frac{x}{2}}$$