8. $f(x) = \underbrace{\left(\frac{x-1}{x+5}\right)}_{P}\underbrace{(x^2+3x+5)}_{Q}$

$P = \frac{x-1}{x+5}$ u $u' = 1$

V $V' = 1$

$\frac{u'V - uV'}{V^2}$

$Q = x^2+3x+5$

$Q' = 2x+3$

$P'Q + PQ'$

$P' = \frac{1(x+5) - (x-1)(1)}{(x+5)^2}$

$= \frac{x+5-x+1}{(x+5)^2}$

$P' = \frac{6}{(x+5)^2}$

$f'(x) = \frac{6}{(x+5)^2}(x^2+3x+5) + \left(\frac{x-1}{x+5}\right)(2x+3)$

$= \frac{1}{x+5}\left[\frac{6}{x+5}(x^2+3x+5) + (x-1)(2x+3)\right]$

$= \frac{1}{x+5}\left[\frac{6x^2+18x+30}{x+5} + \frac{2x^2+3x-2x-3}{1}\right]$

$= \frac{1}{x+5}\left[\frac{6x^2+18x+30}{x+5} + \frac{2x^2+x-3}{1}\right]$

$= \frac{1}{x+5}\left[\frac{6x^2+18x+30}{x+5} + \frac{(2x^2+x-3)(x+5)}{x+5}\right]$

$= \frac{1}{x+5}\left[\frac{6x^2+18x+30}{x+5} + \frac{2x^3+x^2-3x+10x^2+5x-15}{x+5}\right]$

$= \frac{1}{x+5}\left[\frac{2x^3+17x^2+20x+15}{x+5}\right]$

$= \boxed{\frac{2x^3+17x^2+20x+15}{(x+5)^2}}$