Answer on Question #48609 – Math – Calculus

if sec(x+y/x-y)=a, prove that dy/dx=y/x

Solution.

$$\boldsymbol{sec\left(\frac{x+y}{x-y}\right)=a\rightarrow\ \frac{x+y}{x-y}=arcsec(a)\rightarrow\frac{d}{dx}\left(\frac{x+y}{x-y}\right)=\frac{d}{dx}\big(arcsec(a)\big)\rightarrow}$$

$$\boldsymbol{\rightarrow\ \frac{(1+y')(x-y)-(1-y')(x+y)}{(x-y)^2}=0\ \rightarrow}$$

$$\boldsymbol{\rightarrow\ \ 2y-2xy'=0\rightarrow\ \ y'=\frac{dy}{dx}=\frac{y}{x}.}$$