

[52] Find  $y''$  for  $\frac{1}{x} - \frac{1}{y} = 1$

$\rightarrow x^{-1} - y^{-1} = 1$

نشتق

$-1x^{-2} - -1y^{-2}y' = 0$

$-x^{-2} + y^{-2}y' = 0 \rightarrow -x^{-2} + y^{-2}y' = 0 \rightarrow \frac{y^{-2}y'}{y^{-2}} = \frac{x}{y}$

$y' = \frac{x^{-2}}{y^{-2}} = \frac{y^2}{x^2}$

نشتق  $y' = \frac{y^2}{x^2}$

$y'' = \frac{x^2(2yy') - y^2(2x)}{x^4}$

$\rightarrow y'' = \frac{x^2(2y \cdot \frac{y^2}{x^2}) - 2xy^2}{x^4} = \frac{2y^3 - 2xy^2}{x^4}$