$$\begin{cases} y = \dfrac{t^2}{t-1} \\ x = \dfrac{t}{t^2-1} \end{cases} \qquad\qquad y'_x = \dfrac{y'_t}{x'_t}$$

y'_t по правилу $\dfrac{d}{dx}\left(\dfrac{u}{v}\right) = \dfrac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$; $\;u = t^2$, $\;v = t-1$

$$\Rightarrow \dfrac{(t-1)\left(\frac{d}{dt}(t^2)\right) - t^2\left(\frac{d}{dt}(t-1)\right)}{(t-1)^2} \rightarrow \dfrac{2t(t-1) - t^2}{(t-1)^2} \rightarrow$$

$$\rightarrow \dfrac{t(t-2)}{(t-1)^2}$$

x'_t по правилу (см. выше), $\;u = t$; $\;v = t^2-1$

$$\Rightarrow \dfrac{(t^2-1)\left(\frac{d}{dt}(t)\right) - t\left(\frac{d}{dt}(t^2-1)\right)}{(t^2-1)^2} \rightarrow \dfrac{t^2-1-2t\cdot t}{(t^2-1)^2} \rightarrow$$

$$\rightarrow -\dfrac{(t^2+1)}{(t^2-1)^2}$$

$$y'_x = \dfrac{t(t-2)}{(t-1)^2} \cdot \dfrac{(t^2-1)^2}{-(t^2+1)} = -\dfrac{t(t-2)(t+1)^2}{t^2+1}$$