

$$\begin{aligned}\frac{\frac{1-3x^2}{1-x^2}}{\frac{x}{x-1}+1} &= \frac{\frac{1-3x^2}{1-x^2}}{\frac{2x-1}{x-1}} = \frac{1-3x^2}{1-x^2} * \frac{x-1}{2x-1} = \frac{1-3x^2}{(x+1)(x-1)} * \frac{x-1}{2x-1} = \frac{1-3x^2}{(2x-1)(x+1)} = \\ &= \frac{\left(x - \frac{\sqrt{3}}{3}\right)\left(x + \frac{\sqrt{3}}{3}\right)}{(2x-1)(x+1)}\end{aligned}$$