

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

Solution

$$-\frac{4t}{(1+t^2)^2}$$

Solution steps

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

Apply the Quotient Rule: $\left(\frac{f}{g}\right)' = \frac{f' \cdot g - g' \cdot f}{g^2}$

$$= \frac{\frac{d}{dt}(1-t^2)(1+t^2) - \frac{d}{dt}(1+t^2)(1-t^2)}{(1+t^2)^2}$$

$$\frac{d}{dt}(1 - t^2) = -2t$$

$$\frac{d}{dt}(1+t^2) = 2t$$

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

Simplify $\frac{(-2t)(1+t^2) - 2t(1-t^2)}{(1+t^2)^2}$: $-\frac{4t}{(1+t^2)^2}$

$$= -\frac{4t}{(1+t^2)^2}$$

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Graph

Plotting: $y = -\frac{4t}{(1+t^2)^2}$

