

Čista derivace + zjednodušení

$$f(x) = \ln \frac{x}{\sqrt{1-x^2}}$$

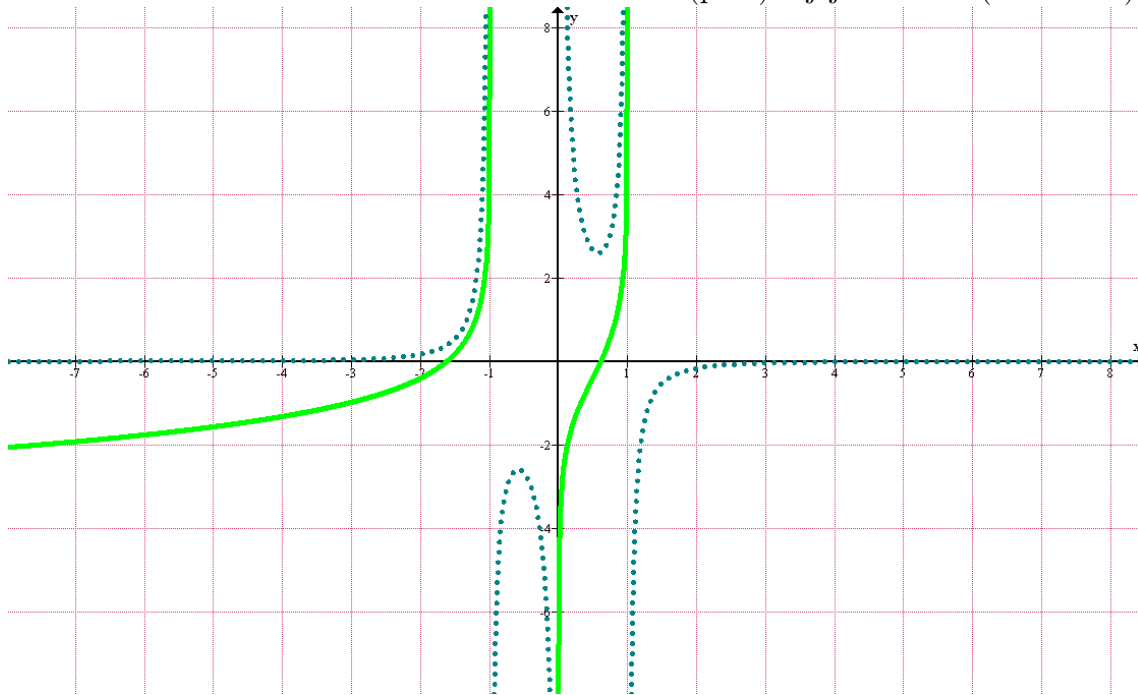
$$f'(x) = \frac{1}{\frac{x}{\sqrt{1-x^2}}} \cdot \frac{1 \cdot \sqrt{1-x^2} - x \cdot \frac{1}{2\sqrt{1-x^2}} \cdot (-2x)}{(\sqrt{1-x^2})^2} =$$

$$= \frac{\sqrt{1-x^2}}{x} \cdot \frac{\sqrt{1-x^2} + \cancel{2x^2} \cdot \frac{1}{\cancel{2 \cdot \sqrt{1-x^2}}}}{1-x^2} =$$

$$= \frac{\sqrt{1-x^2}}{x} \cdot \frac{\sqrt{1-x^2} + \frac{x^2}{\sqrt{1-x^2}}}{1-x^2} = \frac{\sqrt{1-x^2}}{x} \cdot \frac{\frac{1-x^2 + x^2}{\sqrt{1-x^2}}}{1-x^2} =$$

$$= \frac{\frac{\sqrt{1-x^2}}{\sqrt{1-x^2}}}{x(1-x^2)} = \frac{1}{\underline{\underline{x-x^3}}}$$

OBRÁZEK 1. Grafické znázornění zadané funkce (plná) a její derivace (tečkovaná)



Zdroj: program Graph