

$$y = \sqrt{\frac{1+\sin x}{1-\sin x} \cdot \frac{1+\sin x}{1+\sin x}}$$

$$y = \frac{\sqrt{(1+\sin x)^2}}{\sqrt{1-\sin^2 x}} = \frac{1+\sin x}{\sqrt{\cos^2 x}} = \frac{1+\sin x}{\cos x}$$

$$\text{Let } u = 1+\sin x \quad \frac{du}{dx} = \cos x$$

$$v = \cos x \quad \frac{dv}{dx} = -\sin x$$

$$\frac{d}{dx} \left(\frac{u}{v} \right) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$\frac{dy}{dx} = \frac{\cos x \cdot \cos x - (1+\sin x)(-\sin x)}{\cos^2 x}$$

$$\frac{dy}{dx} = \frac{\cos^2 x + \sin x + \sin^2 x}{\cos^2 x}$$

$$\begin{aligned} \frac{dy}{dx} &= \frac{1+\sin x}{\cos^2 x} = \frac{1+\sin x}{1-\sin^2 x} = \frac{1+\sin x}{(1-\sin x)(1+\sin x)} \\ &= \frac{1}{1-\sin x} \end{aligned}$$