

$$1. f(x) = \ln\left(\frac{2x^{3/2}}{\sin x}\right) \rightarrow \frac{\sin x}{2x^{3/2}} \cdot \frac{d}{dx}\left[\frac{2x^{3/2}}{\sin x}\right]$$

$$\frac{(\sin x)(3x^{1/2}) - (2x^{3/2})(\cos x)}{\sin^2 x} \cdot \frac{\sin x}{2x^{3/2}}$$

~~$$\frac{3\sqrt{x} \sin x - 2x^{3/2} \cos x}{2x^{3/2} \sin x}$$~~

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2.

$$G(x) = \frac{x\sqrt{x^2+1}}{(x+1)^{2/3}} \rightarrow \ln G(x) = \ln\left(\frac{x\sqrt{x^2+1}}{(x+1)^{2/3}}\right)$$

$$\ln G(x) = \ln(x\sqrt{x^2+1}) - \ln(x+1)^{2/3}$$

product

$$(x) \cdot \frac{d}{dx}\left((x^2+1)^{1/2}\right) + (1) \cdot \left(\sqrt{x^2+1}\right)$$

$$\frac{1}{2}(x^2+1)^{-1/2}$$

$$\frac{1}{2\sqrt{x^2+1}}$$

$$3. p(t) = 5500e^{0.0375t}$$

$$\frac{11000}{5500} = \frac{5500e^{0.0375t}}{5500} \quad 2 = e^{0.0375t}$$

$$a. t = 18.48 \text{ years}$$

$$b. p'(t) = 0.0375 p(t)$$

$$c. 300.1$$