

$$40 \quad \ln x + a \ln y - b \ln c$$

$$= \ln x + \ln y^a - \ln c^b$$

$$\ln(xy^a) - \ln c^b$$

$$\ln\left(\frac{xy^a}{c^b}\right)$$

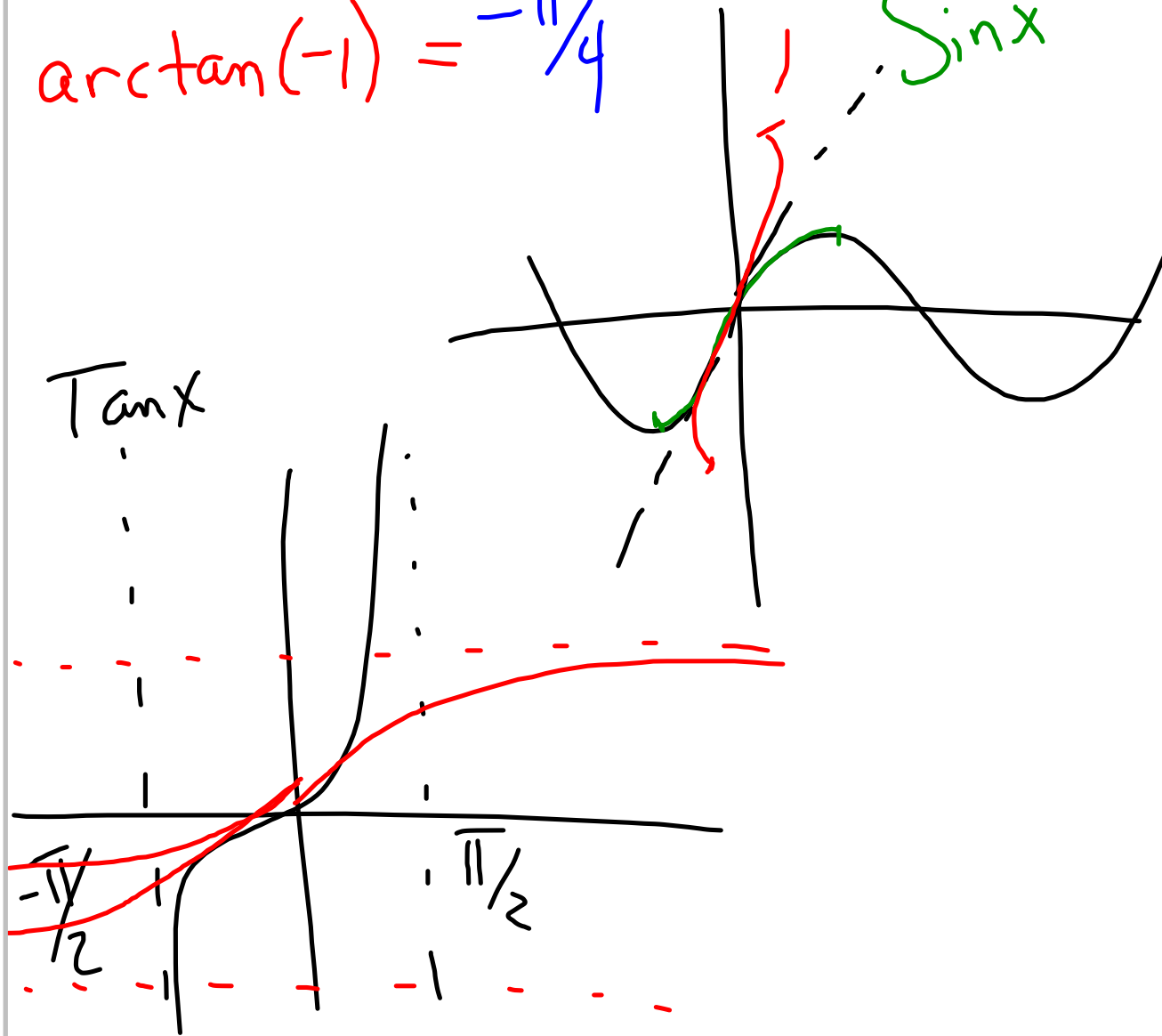
$$\ln(\sin x) - \ln(\sqrt{x+1})$$
$$= \ln \frac{\sin x}{\sqrt{x+1}}$$

64.

$$\arctan(-1) = -\frac{\pi}{4}$$

$\sin^{-1}x$
 $\arcsin x$

$\sin x$



$$\csc^{-1} 2 = \phi$$

↕

$$2 = \csc \phi$$

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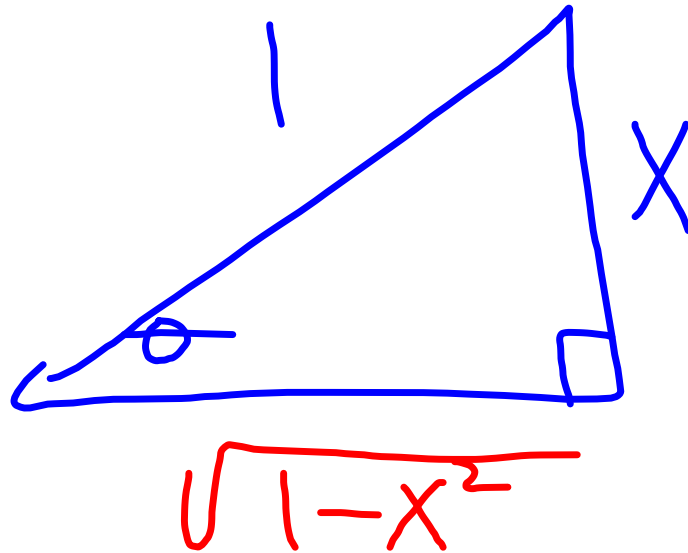
$$2 = \frac{1}{\sin \phi}$$

$$\frac{\pi}{6} = \phi$$

70



$$\tan(\underbrace{\sin^{-1} x}_{=\theta})$$



$$\begin{aligned}\sin^{-1} x &= \theta \\ \Leftrightarrow \sin \theta &= x \\ \sin \theta &= \frac{x}{1}\end{aligned}$$

$$\begin{aligned}\text{So } \tan(\sin^{-1} x) \\ &= \tan \theta \\ &= \frac{x}{\sqrt{1-x^2}}\end{aligned}$$

29.

$$f(x) = 1 - \frac{2}{x^2} \quad x > 0$$

$$x = 1 - \frac{2}{y^2}$$

$$x - 1 = -\frac{2}{y^2}$$

$$1 - x = \frac{2}{y^2}$$

$$\frac{1}{1-x} = \frac{y^2}{2}$$

$$\frac{2}{1-x} = y^2$$

$$\pm \sqrt{\frac{2}{1-x}} = y$$

$$\sqrt{\frac{2}{1-x}} = y$$

$$x < 1$$