Section 7.8-cont: Inverse Trig Functions

Defined Ranges

- $\arcsin(x) = \sin^{-1}(x) \to \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ $-90°$ to $90°$
- $\arccos(x) = \cos^{-1}(x) \to [0, \pi]$ 0 to $180°$
- $\arctan(x) = \tan^{-1}(x) \to \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ $-90°$ to $90°$

Combined Functions

since $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right) = 30°$

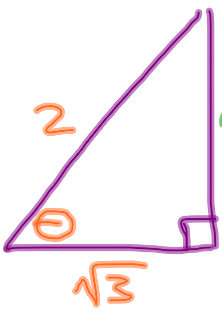
- $\sin\left(\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)\right) = \sin(30°) = \frac{1}{2}$

$\cos^{-1}(\sin(30°)) = \cos^{-1}\left(\frac{1}{2}\right) = 60°$

$\tan\left(\arccos\left(\frac{\sqrt{3}}{2}\right)\right)$

$\arccos\left(\frac{\sqrt{3}}{2}\right) = \theta$

$\cos\theta = \frac{\sqrt{3}}{2}$



$\sqrt{2^2 - \sqrt{3}^2}$

$\sqrt{1} = 1$

$\tan(\theta) = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

Adding a varible

$$\sin(\tan^{-1}(x))$$

$$\tan^{-1}(x) = \theta = \sqrt{x^2+1}$$

$$\tan\theta = \frac{x}{1}$$

$$\sin(\theta) = \frac{x}{\sqrt{x^2+1}} = \frac{x\sqrt{x^2+1}}{x^2+1}$$