

# 5.6 Inverse Trig Functions

Pg. 372 3-13 odd, 15-20, 25-35 odd

3)  $\arcsin(\frac{1}{2})$

$y = \arcsin(\frac{1}{2})$

$\sin y = \sin(\arcsin(\frac{1}{2}))$

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

$y = \pi/6$

5)  $\arccos(\frac{1}{2})$

$y = \arccos(\frac{1}{2})$

$\cos y = \frac{1}{2}$

$y = \pi/3$

7)  $\arctan(\frac{\sqrt{3}}{3})$

$y = \arctan(\frac{\sqrt{3}}{3})$

$\tan y = \frac{\sqrt{3}}{3}$

$y = \pi/6$

$\frac{\sin \pi/6}{\cos \pi/6} = \frac{1/2}{\sqrt{3}/2}$

9)  $\operatorname{arccsc}(-\sqrt{2})$

$y = \operatorname{arccsc}(-\sqrt{2})$

$\operatorname{csc} y = -\sqrt{2}$

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

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

$y = -\frac{\pi}{4}$

11)  $\arccos(-0.8)$

$2.498$

13)  $\operatorname{arcsec}(1.269)$

$y = \operatorname{arcsec}(1.269)$

$\sec y = 1.269$

$\frac{1}{\cos y} = 1.269$

$\cos y = \frac{1}{1.269}$

$y = \cos^{-1}(\frac{1}{1.269}) = .663$

15)  $\cos y = x$

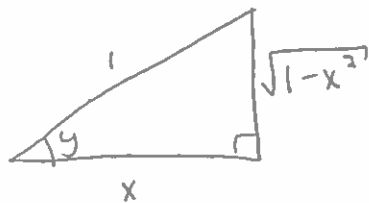
16)  $\sin y = \sqrt{1-x^2}$

17)  $\tan y = \frac{\sqrt{1-x^2}}{x}$

18)  $\cot y = \frac{x}{\sqrt{1-x^2}}$

19)  $\sec y = \frac{1}{x}$

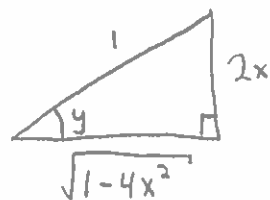
20)  $\operatorname{csc} y = \frac{1}{\sqrt{1-x^2}}$



25)  $\cos(\arcsin 2x)$

$y = \arcsin 2x$

$\sin y = 2x$



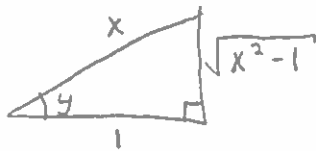
$\cos y = \sqrt{1-4x^2}$

$\cos(\arcsin 2x) = \sqrt{1-4x^2}$

$$27) \sin(\operatorname{arcsec} x)$$

$$y = \operatorname{arcsec} x$$

$$\sec y = x$$



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

$$\sin(\operatorname{arcsec} x) = \frac{\sqrt{x^2 - 1}}{x}$$

$$29) \tan(\operatorname{arcsec} \frac{x}{3})$$

$$y = \operatorname{arcsec} \frac{x}{3}$$

$$\sec y = \frac{x}{3}$$



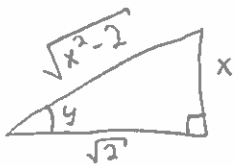
$$\tan y = \frac{\sqrt{x^2 - 9}}{3}$$

$$\tan(\operatorname{arcsec} \frac{x}{3}) = \frac{\sqrt{x^2 - 9}}{3}$$

$$31) \csc(\arctan \frac{x}{\sqrt{2}})$$

$$y = \arctan \frac{x}{\sqrt{2}}$$

$$\tan y = \frac{x}{\sqrt{2}}$$



$$\csc y = \frac{x}{\sqrt{x^2 - 2}}$$

$$\csc(\arctan \frac{x}{\sqrt{2}}) = \frac{x}{\sqrt{x^2 - 2}}$$

$$33) \arcsin(3x - \pi) = \frac{1}{2}$$

$$\sin(\arcsin(3x - \pi)) = \sin \frac{1}{2}$$

$$3x - \pi = \sin \frac{1}{2}$$

$$3x = \sin(\frac{1}{2}) + \pi$$

$$x = \frac{\sin(\frac{1}{2}) + \pi}{3}$$

$$35) \arcsin \sqrt{2x} = \arccos \sqrt{x}$$

$$\sin(\arcsin \sqrt{2x}) = \sin(\arccos \sqrt{x})$$

$$\sqrt{2x} = \sin(\arccos \sqrt{x}) \longrightarrow \sqrt{2x} = \sqrt{1-x}$$

$$\sin(\arccos \sqrt{x})$$

$$y = \arccos \sqrt{x}$$

$$\cos y = \sqrt{x}$$



$$\sin y = \sqrt{1-x}$$

$$2x = 1 - x$$

$$3x = 1$$

$$x = \frac{1}{3}$$