

Solutions: 7.2 (odd-numbered problems)

3.

(a) $\sin^{-1} \frac{\sqrt{22}}{4} \pi$

(b) $\cos^{-1} \frac{\sqrt{22}}{4} \pi$

(c) $\sin^{-1} -\frac{\sqrt{2}}{2} = -\frac{\pi}{4}$

5.

(a) $\sin^{-1} 1 = \frac{\pi}{2}$

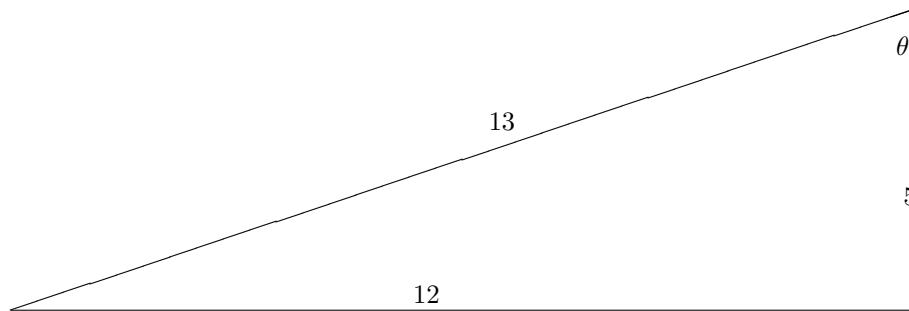
(b) $\cos^{-1} 1 = 0$

(c) $\cos^{-1} -1 = \pi$

19.

$$\sin^{-1} \left[\sin \left(-\frac{\pi}{6} \right) \right] = \sin^{-1} \left[-\frac{1}{2} \right] = -\frac{\pi}{6}$$

31. Consider the triangle:



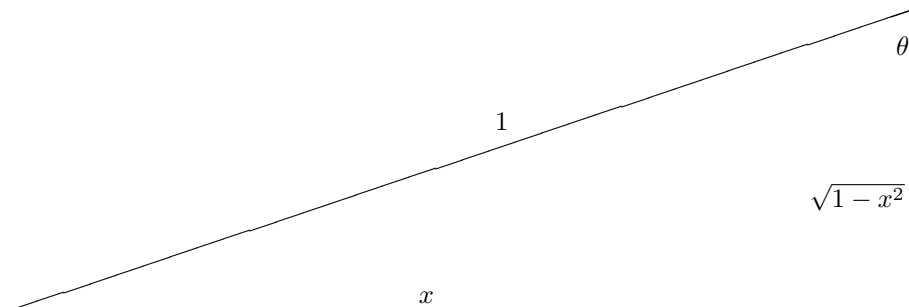
From this triangle, we see that

$$\theta = \tan^{-1} \frac{12}{5}$$

and so

$$\sin \left(\tan^{-1} \frac{12}{5} \right) = \sin \theta = \frac{12}{13}$$

Again, consider the triangle:



So we have $\sin^{-1} x = \theta$. So

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

51.

(a) We have

$$\sin \theta = \frac{h}{680}$$

so

$$\theta = \sin^{-1} \frac{h}{680}$$

(b) So if $h = 500$ then we need

$$\sin^{-1} \frac{500}{680} \approx 0.826101 \text{ radians} \approx 47.3321^\circ$$