

7.3.17 Since $\sin 45^\circ = \sqrt{2}/2$ and $\cos 45^\circ = \sqrt{2}/2$,

$$4 \cos 45^\circ - 2 \sin 45^\circ = 4 \left(\frac{\sqrt{2}}{2} \right) - 2 \left(\frac{\sqrt{2}}{2} \right) = 2\sqrt{2} - \sqrt{2} = \sqrt{2}.$$

7.3.23 Since $\sec(\pi/6) = 1/\cos(\pi/6) = 1/(\sqrt{3}/2) = 2\sqrt{3}/3$,

$$\sec^2\left(\frac{\pi}{6}\right) - 4 = \left(\sec\left(\frac{\pi}{6}\right)\right)^2 - 4 = \left(\frac{2\sqrt{3}}{3}\right)^2 - 4 = \frac{4}{3} - \frac{12}{3} = -\frac{8}{3}.$$

7.3.27 Since $\cos 30^\circ = \sqrt{3}/2$ and $\cos 60^\circ = 1/2$,

$$1 - \cos^2 30^\circ - \cos^2 60^\circ = 1 - (\cos 30^\circ)^2 - (\cos 60^\circ)^2 = 1 - \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{2}\right)^2 = \frac{4}{4} - \frac{3}{4} - \frac{1}{4} = 0.$$