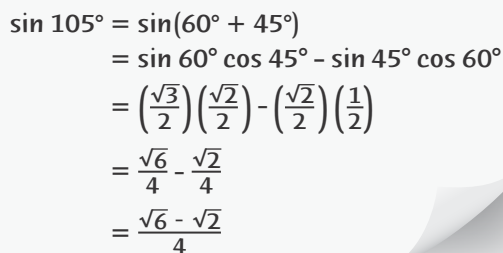




8-3 Additional Practice

Trigonometric Identities

1. How are $\cos(x + \pi)$ and $\cos(2\pi - x)$ related to $\cos x$?
2. What is a simplified form of the expression $\cot\left(x - \frac{\pi}{2}\right)$?
3. What is a simplified form of the expression $\cos(-x) \cot(-x) \sin x$?
4. What is the exact value of $\tan 75^\circ$?
5. What is the approximate value of $\sin\left(-\frac{\pi}{36}\right)$?
6. During calculations, a student made an error. What error did she make? What is the correct answer?


$$\begin{aligned}\sin 105^\circ &= \sin(60^\circ + 45^\circ) \\ &= \sin 60^\circ \cos 45^\circ - \sin 45^\circ \cos 60^\circ \\ &= \left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{1}{2}\right) \\ &= \frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4} \\ &= \frac{\sqrt{6} - \sqrt{2}}{4}\end{aligned}$$

7. The length of a guy-wire supporting a vertical communication antenna is d feet. The length of its shadow depends on the measure of the angle θ it makes with the horizon. The shadow of the guy-wire is defined by $L = \frac{d \sin(\theta - 90^\circ)}{-\sin \theta}$. Show that this equation is equivalent to $L = d \cot \theta$.