

5.2:

2. a) $\cos(12\pi) = \cos(2\pi) = 1.$

b) $\sin\left(\frac{5\pi}{2}\right) = \sin\left(\frac{\pi}{2} + \frac{4\pi}{2}\right)$
 $= \sin\left(\frac{\pi}{2} + 2\pi\right)$
 $= \sin\left(\frac{\pi}{2}\right)$
 $= 1.$

c) $\sin\left(-\frac{9\pi}{2}\right) = \sin\left(-\frac{9\pi}{2} + \frac{12\pi}{2}\right)$
 $= \sin\left(\frac{3\pi}{2}\right)$
 $= -1$

d) $\cos(101\pi) = \cos(\pi + 100\pi)$
 $= \cos(\pi)$
 $= -1$

4. What is $\cos(\theta + \pi)$ in terms of $\cos(\theta)$?

$$\cos(\theta + \pi) = -\cos(\theta)$$

6.



a) calculate $\sin(\theta)$ and $\cos(\theta)$

$$\sin(\theta) = \frac{3}{5}$$

$$\cos(\theta) = \frac{4}{5}.$$

b) calculate $\sin^2(\theta) + \cos^2(\theta)$

$$\left(\frac{3}{5}\right)^2 + \left(\frac{4}{5}\right)^2 = \frac{9}{25} + \frac{16}{25} = \frac{25}{25} = 1.$$

5.3

2. $\sin\left(\frac{7\pi}{4}\right) = \sin\left(\frac{7\pi}{4} - \frac{8\pi}{4}\right) = \sin\left(-\frac{\pi}{4}\right) = -\sin\left(\frac{\pi}{4}\right) = -\frac{\sqrt{2}}{2}.$

4. $\cos\left(-\frac{3\pi}{4}\right) = \cos\left(\frac{3\pi}{4}\right) = -\frac{\sqrt{2}}{2}.$

8. $\cos\left(\frac{13\pi}{6}\right) = \cos\left(\frac{12\pi}{6} + \frac{\pi}{6}\right) = \cos\left(\frac{\pi}{6} + 2\pi\right) = \cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}.$

12. $\sin\left(\frac{29\pi}{6}\right) = \sin\left(\frac{24\pi}{6} + \frac{5\pi}{6}\right) = \sin\left(4\pi + \frac{5\pi}{6}\right) = \sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$