

# Chapter 6, Trigonometric Equations

## ODD Focus Exercise Answers

### Sec. 6.1 Solving Trigonometric Equations

1.  $\theta = 30^\circ, 330^\circ$
3.  $x = \frac{2\pi}{3}, \frac{5\pi}{3}$
5.  $\theta = 30^\circ, 150^\circ, 210^\circ, 330^\circ$
7.  $x = 0, \pi, \frac{\pi}{4}, \frac{5\pi}{4}$
9.  $\left. \begin{array}{l} x = \frac{2\pi}{3} + 2\pi k \\ x = \frac{4\pi}{3} + 2\pi k \end{array} \right\} k \in \mathbf{Z}$
11.  $\left. \begin{array}{l} \theta = 135^\circ + 360^\circ k \\ \theta = 315^\circ + 360^\circ k \end{array} \right\} k \in \mathbf{Z}$   
or ...  $\theta = 135^\circ + 180^\circ k$
13.  $\theta = 20^\circ, 200^\circ$
15.  $x = \frac{\pi}{4}, \frac{7\pi}{4}$

### Sec. 6.2 More Techniques for Solving Trigonometric Equations

1.  $x = \frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$
3.  $\theta = 0^\circ, 180^\circ, 270^\circ$
5.  $\theta = 90^\circ + 180^\circ k, k \in \mathbf{Z}$
7.  $\left. \begin{array}{l} x = \frac{\pi}{2} + \pi k \\ x = \frac{7\pi}{6} + 2\pi k \\ x = \frac{11\pi}{6} + 2\pi k \end{array} \right\} k \in \mathbf{Z}$
9.  $x = 0, \pi, \frac{2\pi}{3}, \frac{5\pi}{3}$
11.  $x = 0, \frac{2\pi}{3}$  (Note:  $\frac{4\pi}{3}$  is extraneous)

### Sec. 6.3 Trigonometric Equations of Multiple Angle Measures

1.  $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$
3.  $x = \frac{7\pi}{12}, \frac{11\pi}{12}, \frac{19\pi}{12}, \frac{23\pi}{12}$
5.  $\theta = 0^\circ, 60^\circ, 120^\circ, 180^\circ, 240^\circ, 300^\circ$
7.  $\theta = 90^\circ, 270^\circ$
9.  $\left. \begin{array}{l} \theta = 10^\circ + 60^\circ k \\ \theta = 50^\circ + 60^\circ k \end{array} \right\} k \in \mathbf{Z}$
11.  $x = \frac{\pi}{4} + \frac{\pi}{2} k, k \in \mathbf{Z}$