

Worksheet 102B - Solving Trigonometric Equations

Find all solutions to each equation in radians.

1) $\sin \theta = \frac{\sqrt{3}}{2}$

2) $\frac{1}{2} = \cos \theta$

3) $\sin \theta = \frac{\sqrt{2}}{2}$

4) $\cos \theta = -\sqrt{2}$

5) $-1 + \cos \theta = \frac{-2 - \sqrt{3}}{2}$

6) $\frac{2}{3} = \frac{1}{3} \cdot \cos \theta$

7) $5 + \cos \theta = 4$

8) $3 + \cos \theta = 4$

$$9) -3\sec \theta = -2\sqrt{3}$$

$$10) 12\csc \theta = -8\sqrt{3}$$

$$11) -2 + \sec \theta = -1$$

$$12) \frac{6 + 2\sqrt{3}}{3} = 2 + \sec \theta$$

$$13) \frac{2\sqrt{3}}{3} - 3\sec \theta = -2\sec \theta$$

$$14) 4\cos \theta = \frac{\sqrt{2}}{2} + 3\cos \theta$$

$$15) -\sqrt{2} + 1 = 1 + \csc \theta$$

$$16) 2\csc \theta = 2 + \csc \theta$$

$$17) -\sin \theta = -\frac{\sqrt{2}}{2} - 2\sin \theta$$

$$18) \sqrt{2} - 2 = -2 + \csc \theta$$

Answers to Worksheet 102B - Solving Trigonometric Equations

- 1) $\left\{ \frac{\pi}{3} + 2\pi n, \frac{2\pi}{3} + 2\pi n \right\}$ 2) $\left\{ \frac{\pi}{3} + 2\pi n, \frac{5\pi}{3} + 2\pi n \right\}$ 3) $\left\{ \frac{\pi}{4} + 2\pi n, \frac{3\pi}{4} + 2\pi n \right\}$ 4) No solution.
 5) $\left\{ \frac{5\pi}{6} + 2\pi n, \frac{7\pi}{6} + 2\pi n \right\}$ 6) No solution. 7) $\{ \pi + 2\pi n \}$
 8) $\{ 2\pi n \}$ 9) $\left\{ \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \right\}$ 10) $\left\{ \frac{4\pi}{3} + 2\pi n, \frac{5\pi}{3} + 2\pi n \right\}$
 11) $\{ 2\pi n \}$ 12) $\left\{ \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \right\}$ 13) $\left\{ \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \right\}$
 14) $\left\{ \frac{\pi}{4} + 2\pi n, \frac{7\pi}{4} + 2\pi n \right\}$ 15) $\left\{ \frac{5\pi}{4} + 2\pi n, \frac{7\pi}{4} + 2\pi n \right\}$ 16) $\left\{ \frac{\pi}{6} + 2\pi n, \frac{5\pi}{6} + 2\pi n \right\}$
 17) $\left\{ \frac{5\pi}{4} + 2\pi n, \frac{7\pi}{4} + 2\pi n \right\}$ 18) $\left\{ \frac{\pi}{4} + 2\pi n, \frac{3\pi}{4} + 2\pi n \right\}$