5-5 Multiple-Angle and Product-to-Sum Identities

Find the values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$ for the given value and interval.

2. $\tan \theta = \frac{8}{15}, (180°, 270°)$

ANSWER:

$\frac{240}{289}; \frac{161}{289}; \frac{240}{161}$

4. $\sin \theta = -\frac{7}{12}, \left(\frac{3\pi}{2}, 2\pi\right)$

ANSWER:

$-\frac{7\sqrt{95}}{72}; \frac{23}{72}; -\frac{7\sqrt{95}}{23}$

6. $\tan \theta = \sqrt{3}, \left(0, \frac{\pi}{2}\right)$

ANSWER:

$\frac{\sqrt{3}}{2}; -\frac{1}{2}; -\sqrt{3}$

8. $\cos \theta = -\frac{5}{13}, \left(\pi, \frac{3\pi}{2}\right)$

ANSWER:

$\frac{120}{169}; -\frac{119}{169}; -\frac{120}{119}$

Solve each equation on the interval $[0, 2\pi]$.

10. $\cos 2\theta = \cos \theta$

ANSWER:

$0, \frac{2\pi}{3}, \frac{4\pi}{3}$

12. $\tan 2\theta - \tan 2\theta \tan^2 \theta = 2$

ANSWER:

Ø

14. $\cos 2\theta + 4 \cos \theta = -3$

ANSWER:

π

Solve each equation.

24. $1 - \sin^2 \theta - \cos 2\theta = \frac{1}{2}$

ANSWER:

$\frac{\pi}{4} + n\pi, \frac{3\pi}{4} + n\pi$, where n is an integer

25. $\cos^2 \theta - \frac{3}{2} \cos 2\theta = 0$

ANSWER:

$\frac{\pi}{6} + n\pi, \frac{5\pi}{6} + n\pi$, where n is an integer

26. $\sin^2 \theta - 1 = \cos^2 \theta$

ANSWER:

$\frac{\pi}{2} + n\pi, n \in Z$

27. $\cos^2 \theta - \sin \theta = 1$

ANSWER:

$n\pi, \frac{3\pi}{2} + 2n\pi$, where n is an integer