

Solving Trig Equations

Date _____ Period _____

Solve each equation for $0 \leq \theta < 2\pi$. (Take square root)

1) $\tan^2 \theta + 5 = 6$

2) $0 = -3 + \tan^2 \theta$

3) $5\cos^2 \theta = 3 + \cos^2 \theta$

4) $7\sin^2 \theta + 2 = 3 + 3\sin^2 \theta$

5) $-1 = \cos^2 \theta - 2$

Solve each equation for $0 \leq \theta < 2\pi$. (Factoring)

6) $-\cos \theta = \sin \theta - \sin \theta \cos \theta - \cos \theta$

7) $3\tan^2 \theta = 4\tan^2 \theta + \tan \theta$

8) $\tan \theta - \sin \theta = -2\tan \theta \sin \theta - \sin \theta$

9) $\sqrt{3}\tan \theta = \tan^2 \theta$

10) $0 = -3\cos \theta \tan \theta - \sqrt{3}\cos \theta$

11) $\tan \theta \sin \theta + 4\tan \theta = 3\tan \theta$

12) $-3\sin \theta = -\sqrt{3}\sin \theta - 3\sin \theta \tan \theta - 3\sin \theta$

13) $-2\sin^2 \theta = \sin \theta - 3\sin^2 \theta$

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

15) $\sin \theta - \sqrt{2}\sin \theta \cos \theta - 2\cos \theta = -2\cos \theta$

Solve each equation for $0 \leq \theta < 360$. (Factor trinomial)

16) $-2\cos^2 \theta - 2 = -3 + \cos \theta$

17) $3\cos \theta + \cos^2 \theta = 1 + 3\cos^2 \theta$

18) $4 + 3\cos \theta = -2\cos^2 \theta + 3$

19) $-2\sin \theta - 1 = \sin^2 \theta$

20) $1 + \sin^2 \theta = \sin \theta + 3\sin^2 \theta$

Solve each equation for $0 \leq \theta < 2\pi$. (Use Pythagorean Identity)

21) $\cos \theta = \sin^2 \theta - \cos^2 \theta$

22) $2 - \cos^2 \theta = 2\sin \theta$

23) $\sin^2 \theta - \cos^2 \theta = \sin \theta$

24) $-3\cos \theta + \sin^2 \theta = 2 + \cos^2 \theta$

25) $-2 - 3\sin^2 \theta = -4\sin \theta - \cos^2 \theta$

Solve each equation for $0 \leq \theta < 360$. (Square both sides)

26) $\sqrt{3}\cos \theta + \sin \theta = 2\sin \theta$

27) $\sqrt{3}\cos \theta + 3\sin \theta = 0$

28) $1 + \sin \theta - 4\cos \theta = -3\cos \theta$

29) $0 = 1 + \sin \theta + \cos \theta$

30) $\sqrt{3}\cos \theta - \cos \theta = -\sin \theta - \cos \theta$

Bonus: Solve the equations within the interval of 0 to 2pi.

31) $1 + \cos \theta = -\sin \theta$

32) $\sec^2 \theta = 2$

33) $0 = 1 - 3\tan^2 \theta$

Solve each equation for $0 \leq \theta < 2\pi$.

34) $\cos \theta = 1 + \sin \frac{\theta}{2}$

35) $0 = -4\cos \frac{\theta}{2} + 3 + 2\cos \theta$

36) $0 = -4\sin \theta + 6\sin^2 \theta + \cos 2\theta$

37) $\cos \frac{\theta}{2} + \cos \theta = 0$