ILLAWARRA TUTORING

In this worksheet students will develop techniques to solve trigonometric equations over specified intervals. Read each question carefully and show all your working.

Easy Questions

1. Solve $\sin\theta = 0$ for $0 \leq \theta < 2\pi$.
2. Solve $\cos\theta = 1$ for $0 \leq \theta < 2\pi$.
3. Solve $\sin\theta = 1$ for $0 \leq \theta < 2\pi$.
4. Solve $\cos\theta = 0$ for $0 \leq \theta < 2\pi$.
5. Solve $\tan\theta = 0$ for $0 \leq \theta < \pi$.

Intermediate Questions

11. Solve $2\sin\theta\cos\theta = \sin\theta$ for $0 \leq \theta < 2\pi$.
12. Solve $2\cos^2\theta - 3\cos\theta + 1 = 0$ for $0 \leq \theta < 2\pi$.
13. Solve $\sin^2\theta - 2\sin\theta\cos\theta = 0$ for $0 \leq \theta < 2\pi$.
14. Solve $\sin\theta = \cos\theta$ for $0 \leq \theta < 2\pi$.
15. Solve $1 - \sin^2\theta = \cos\theta$ for $0 \leq \theta < 2\pi$.
16. Solve $\tan\theta = \sqrt{3}$ for $0 \leq \theta < \pi$.
17. Solve $2\sin^2\theta - \sin\theta - 1 = 0$ for $0 \leq \theta < 2\pi$.
18. Solve $3\sin\theta - 2\cos\theta = 0$ for $0 \leq \theta < 2\pi$.
19. Solve $\sin\theta\cos\theta = \dfrac{1}{4}$ for $0 \leq \theta < 2\pi$.
20. Solve $4\cos^2\theta - 9\sin^2\theta = 1$ for $0 \leq \theta < 2\pi$.
21. Solve $\sin\theta + \sin 3\theta = 0$ for $0 \leq \theta < 2\pi$.
22. Solve $\cos\theta - \cos 2\theta = 0$ for $0 \leq \theta < 2\pi$.
23. Solve $2\tan^2\theta - 3\tan\theta - 2 = 0$ for $0 \leq \theta < \pi$, noting any restrictions.
24. Solve $\sin\theta = 2\sin\theta\cos\theta$ for $0 \leq \theta < 2\pi$.
25. Solve $1 + \cos\theta = 2\cos^2\theta$ for $0 \leq \theta < 2\pi$.

Hard Questions

26. Solve $2\sin^2\theta + \cos\theta - 1 = 0$ for $0 \leq \theta < 2\pi$.
27. Solve $\sin 2\theta = \cos\theta$ for $0 \leq \theta < 2\pi$.
28. Solve $2\cos 2\theta - \sin\theta = 0$ for $0 \leq \theta < 2\pi$.
29. Solve $\cos\theta + \cos 3\theta = 0$ for $0 \leq \theta < 2\pi$.
30. Solve $\tan\theta + \cot\theta = 2$ for $0 \leq \theta < 2\pi$, noting any restrictions.
31. Solve $3\sin\theta - 4\cos\theta = 0$ for $0 \leq \theta < 2\pi$.
32. Solve $2\sin\theta\cos\theta - \sin\theta = 0$ for $0 \leq \theta < 2\pi$.
33. Solve $2\sin\theta - 1 = \cos\theta$ for $0 \leq \theta < 2\pi$.
34. Solve $\cos 2\theta = 2\cos\theta - 1$ for $0 \leq \theta < 2\pi$.
35. Solve $\sin\theta + \sin 2\theta + \sin 3\theta = 0$ for $0 \leq \theta < 2\pi$.