Name: Key

Pre AP Pre Calculus

5.11 Mixed Solving Equations Worksheet

Solve each equation on the indicated domain, show all of your work on a separate paper.

1. $4\cos^2\theta + 4\cos\theta = -1$ $\theta \in [0^\circ, 360^\circ)$ $120^\circ, 240^\circ$
2. $\sin x \cos x = -\frac{1}{2}$ $x \in [0, 2\pi)$ $3\pi/4, 7\pi/4$
3. $2\sin^2 x - 5\sin x + 2 = 0$ $x \in [0, 2\pi)$ $\pi/6, 5\pi/6$
4. $\cos^2 x - \sin^2 x = 0$ $x \in [0, 2\pi)$ $\pi/4, 3\pi/4, 5\pi/4, 7\pi/4$
5. $4\sin^2\theta - 3 = 0$ $\theta \in [0^\circ, 360^\circ)$ $60^\circ, 120^\circ, 240^\circ, 300^\circ$
6. $\cos 2x = 2 - 2\sin^2 x$ $x \in [0, 2\pi)$ NO SOLUTION
7. $\cos 4x \cos x + \sin 4x \sin x = -1$ $x \in [0, 2\pi)$ $\pi/3, \pi, 5\pi/3$
8. $\dfrac{\sin\left(\frac{\pi}{2} - x\right)}{\sin x} = -\sqrt{3}$ $x \in \left(-\frac{3\pi}{2}, \frac{3\pi}{3}\right)$ $-7\pi/6, -\pi/6, 5\pi/6$
9. $\tan(90^\circ - \theta) = -\frac{\sqrt{3}}{3}$ $\theta \in (-180^\circ, 180^\circ)$ $-60^\circ, 120^\circ$
10. $\sin 2\theta \cos 58^\circ + \cos 2\theta \sin 58^\circ = \frac{\sqrt{3}}{2}$ $\theta \in [0^\circ, 360^\circ)$ $1^\circ, 31^\circ, 181^\circ, 201^\circ$
11. $\cos 3\theta \cos 12^\circ - \sin 3\theta \sin 12^\circ = \frac{1}{2}$ $\theta \in (-180^\circ, 180^\circ)$ $-144^\circ, -104^\circ, -24^\circ, 16^\circ, 96^\circ, 136^\circ$
12. $\sin 2x = \cos x$ $x \in [0, 2\pi)$ $\pi/6, \pi/2, 5\pi/6, 3\pi/2$
13. $\tan 2(\theta + 41^\circ) = 1$ $\theta \in [0^\circ, 360^\circ)$ $71.5^\circ, 161.5^\circ, 251.5^\circ, 341.5^\circ$
14. $\sin\theta \cos 37^\circ = \cos\theta \sin 37^\circ$ $\theta \in [0^\circ, 360^\circ)$ $37^\circ, 217^\circ$
15. $\cos 2x - \sin x = 1$ $x \in [0, 2\pi)$ $0, \pi, 7\pi/6, 11\pi/6$
16. $\sin 2x + \cos x = 0$ $x \in [0, 2\pi)$ $\pi/2, 7\pi/6, 3\pi/2, 11\pi/6$
17. $4\sin x \cos x = -\sqrt{3}$ $x \in (-\pi, \pi)$ $-\pi/3, -\pi/6, 2\pi/3, 5\pi/6$
18. $\cos 2x + \sin^2 x = 0$ $x \in [0, 2\pi)$ $\pi/2, 3\pi/2$
19. $2\cos^2 x - 2\cos 2x = 1$ $x \in [0, 2\pi)$ $\pi/4, 3\pi/4, 5\pi/4, 7\pi/4$
20. $\sin 2x - \cos x = 0$ $x \in [0, 2\pi)$ See #12
21. $\cos 2x + \cos x = 0$ $x \in [0, 2\pi)$ $\pi/3, \pi, 5\pi/3$
22. $(\sin x - \cos x)^2 = 1$ $x \in [0, 2\pi)$ $0, \pi/2, \pi, 3\pi/2$
23. $\sin x \cos x + \frac{1}{2} = 0$ $x \in [0, 2\pi)$ $3\pi/4, 7\pi/4$