

14-7 • Guided Problem Solving

GPS Student Page 824, Exercise 42

Use identities to write the equation $4 \sin 2\theta - 3 \cos \theta = 0$ in terms of the single angle θ . Then solve the equation for $0 \leq \theta < 2\pi$.

Read and Understand

1. What is a double-angle identity for $\sin 2\theta$? _____
2. What is a double-angle identity for $\cos 2\theta$? _____

Plan and Solve

$$4\sin 2\theta - 3\cos \theta = 0$$

3. Use the double-angle identity to rewrite $\sin 2\theta$. $4(\text{_____}) - 3\cos \theta = 0$
4. Multiply the quantity by 4. $\text{_____} - 3\cos \theta = 0$
5. Factor out $\cos \theta$. $\cos \theta(\text{_____}) = 0$
6. Rewrite as two separate equations. $\cos \theta = 0$ or $\text{_____} = 0$
7. Solve for θ . $\theta = \text{_____}$

Look Back and Check

8. To check your answer, substitute the value(s) for θ into the original equation and verify that a true statement results. _____

Solve Another Problem

9. Use identities to write the equation $\cos 2\theta = \cos \theta$ in terms of the single angle θ . Then solve the equation for $0 \leq \theta < 2\pi$. _____

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