Lesson 14.5- Pg 1024 #3-6

14-5 **Exercises**

California Standards
3.0; Preview of Trig 11.0

Homework
KEYWORD: M.
Parent Resource
KEYWORD:

GUIDED PRACTICE

SEE EXAMPLE 1
p. 1020

Find $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$ for each set of conditions.

1. $\cos \theta = -\dfrac{5}{13}$ and $\dfrac{\pi}{2} < \theta < \pi$

2. $\sin \theta = \dfrac{4}{5}$ and $0° < \theta < 90°$

SEE EXAMPLE 2
p. 1021

Prove each identity.

3. $2\cos 2\theta = 4\cos^2 \theta - 2$

4. $\sin^2 \theta = 1 - \dfrac{\cos 2\theta + 1}{2}$

5. $\dfrac{1 + \cos 2\theta}{\sin 2\theta} = \cot \theta$

6. $\sin 2\theta = \dfrac{2\tan \theta}{1 + \tan^2 \theta}$

SEE EXAMPLE 3
p. 1022

Use half-angle identities to find the exact value of each trigonometric expression.

7. $\cos 67.5°$

8. $\cos \dfrac{\pi}{12}$

9. $\tan \dfrac{3\pi}{8}$

10. $\sin 112.5°$

SEE EXAMPLE 4
p. 1022

Find $\sin \dfrac{\theta}{2}$, $\cos \dfrac{\theta}{2}$, and $\tan \dfrac{\theta}{2}$ for each set of conditions.

11. $\sin \theta = -\dfrac{24}{25}$ and $180° < \theta < 270°$

12. $\cos \theta = \dfrac{1}{4}$ and $270° < \theta < 360°$

PRACTICE AND PROBLEM SOLVING

Find $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$ for each set of conditions.

13. $\cos \theta = -\dfrac{7}{25}$ and $90° < \theta < 180°$

14. $\tan \theta = \dfrac{20}{21}$ and $0 \le \theta \le \dfrac{\pi}{2}$

Prove each identity.

15. $\dfrac{\sin 2\theta}{\sin \theta} = 2\cos \theta$

16. $\cos^2 \theta = \dfrac{1}{2}(1 + \cos 2\theta)$

17. $\tan \theta = \dfrac{1 - \cos 2\theta}{\sin 2\theta}$

18. $\tan \theta = \dfrac{\sin 2\theta}{1 + \cos 2\theta}$

Use half-angle identities to find the exact value of each trigonometric expression.

19. $\sin \dfrac{7\pi}{12}$

20. $\cos \dfrac{5\pi}{12}$

21. $\sin 22.5°$

22. $\tan 15°$

Find $\sin \dfrac{\theta}{2}$, $\cos \dfrac{\theta}{2}$, and $\tan \dfrac{\theta}{2}$ for each set of conditions.

23. $\tan \theta = -\dfrac{12}{35}$ and $\dfrac{3\pi}{2} < \theta < 2\pi$

24. $\sin \theta = -\dfrac{3}{5}$ and $180° < \theta < 270°$

Multi-Step Rewrite each expression in terms of trigonometric functions of θ rather than multiples of θ. Then simplify.

25. $\sin 3\theta$

26. $\sin 4\theta$

27. $\cos 3\theta$

28. $\cos 4\theta$

29. $\cos 2\theta + 2\sin^2 \theta$

30. $\cos 2\theta + 1$

31. $\tan 2\theta(2 - \sec^2 \theta)$

32. $\dfrac{\cos 2\theta}{\cos \theta + \sin \theta}$

33. $\dfrac{\cos \theta \sin 2\theta}{1 + \cos 2\theta}$

34. $\dfrac{\cos 2\theta - 1}{\sin^2 \theta}$