Name _____ Period _____ Due Date _____

Precalculus: Chapter 5 Review

Determine the exact value of each expression.

1. $\sin\left(\frac{\pi}{2}\right) =$

2. $\cos\left(\frac{4\pi}{3}\right) =$

3. $\tan\left(\frac{-7\pi}{4}\right) =$

4. $\cot(\pi) =$

5. $\sec\left(\frac{5\pi}{6}\right) =$

6. $\csc\left(\frac{3\pi}{2}\right) =$

Simplify each expression.

7. $(1-\sin\alpha)(1+\sin\alpha)$

8. $(\cos\alpha-\sin\alpha)^2+(\cos\alpha+\sin\alpha)^2$

9. $\frac{1-\cos 2x}{\sin x}$

10. $\frac{\cos^2 x-\sin^2 x}{\sin 2x}$

11. $\sec x\cot x\sin 2x$

12. $\frac{1}{1+\sin x}-\frac{\sin(-x)}{\cos^2 x}$

13. $\frac{1}{1-\cos y}+\frac{1}{1+\cos y}$

14. $\frac{\tan\left(\pi/5\right)+\tan\left(\pi/10\right)}{1-\tan\left(\pi/5\right)\tan\left(\pi/10\right)}$

15. $\sin 3\theta\cos 6\theta-\cos 3\theta\sin 6\theta$

16. $1-\frac{1}{\cos^2 x}$

Use identities to find the exact values of the remaining five trigonometric function at x.

17. $\cos x = \frac{-5}{13}$ and $\frac{\pi}{2} < x < \pi$

Prove that each of the following equations is an identity. You must clearly show each step to get credit.

18. $\frac{\sin 2\beta}{2\csc\beta} = \sin^2\beta\cos\beta$

19. $\cos 3x = \cos x(1 - 4\sin^2 x)$

20. $\cos\left(x - \frac{\pi}{2}\right) = \cos x \tan x$

21. $\frac{\sin y \cos y}{\tan y} = 1 - \sin^2 y$

Use an appropriate identity to find the exact value of each expression.

22. $\tan\left(\frac{-\pi}{12}\right)$

23. $\cos(105°)$

Solve each problem.

24. Find the exact value of $\sin(2x)$ given that $\sin x = \frac{3}{5}$ and x is in quadrant II.

Find the exact value of each expression.

25. $\sin^{-1}(-0.5)$

26. $\cos^{-1}(-0.5)$

27. $\tan^{-1}(-1)$

Find all real numbers in $[0,2\pi]$ that satisfy each equation.

28. $2\cos(x)+1=0$

29. $2\sin(2x)+\sqrt{3}=0$

30. $2\sin(-x)+\sqrt{3}=0$

31. $\sin\left(\frac{x}{2}\right)=0$

Find all real numbers in $[0,360°]$ that satisfy each equation.

32. $\sqrt{3}\tan\left(\frac{x}{2}\right)-\sqrt{3}=0$

33. $2\sin^2(x)+1=3\sin x$

34. $\sin^2(2x)-1=0$

Find all real numbers that satisfy each equation. Answers should be in radians.

35. $\sin(x)-1=0$

36. $\sin 2x=\tan x$

37. $2\cos(2x)+1=0$

38. $\cos 2x+\sin^2 x=0$

State the number of possible triangles that can be formed using the given measurements.

39. $m\angle B = 123°, a = 14in, b = 30in$

40. $m\angle C = 67°, b = 10in, c = 16in$

41. $m\angle B = 47°, a = 33in, b = 6in$

42. $m\angle B = 32°, a = 19in, b = 16in$

Find each measurement indicated. Round your answer to the nearest tenth.

43. $m\angle A = 61°, c = 14in, b = 18in$

Find *a*.

44. $m\angle C = 17°, a = 18in, b = 28in$

Find $m\angle A$

Solve the triangle. Round your answers to the nearest tenth.

45. $m\angle A = 123°, a = 15in, c = 10in$

46. $m\angle B = 109°, a = 13in, b = 14in$