Practice Section 5.1: Simplifying Trigonometric Expressions

Use basic trigonometric identities to simplify. Show all substitutions and algebra.

1. $(\tan\theta)(\cos\theta)$

$\sin\theta$

2. $cscx - cosxcotx$

$\sin x$

3. $(\tan\theta)(\cot\theta)$

1

4. $\sin x + \sin x\cot^2 x$

$\csc x$

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

1

6. $(\sin\theta - 1)(\sin\theta + 1)$

$-\cos^2\theta$

7. $(\csc\theta - 1)(\csc\theta + 1)$

$\cot^2\theta$

8. $\cos\theta\,(\sec\theta - \cos\theta)$

$\sin^2\theta$

9. $(\cot\theta)(\sec\theta)(\sin\theta)$

1

10. $(\sec\theta - \tan\theta)(\sec\theta + \tan\theta)$

1

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

$\cot\theta$

12. $\dfrac{1}{\sec^2\theta} + \dfrac{1}{\csc^2\theta}$

1

13. $\dfrac{\tan\theta\cos\theta}{\sin\theta}$

1

14. $\cos^2\theta + (\tan^2\theta)(\cos^2\theta)$

1

15. $1 + (\csc^2\theta)(\cos^2\theta)$

$\csc^2\theta$

16. $\sin\theta\csc(-\theta)$

-1

17. $\sec\theta\sin\left(\dfrac{\pi}{2} - \theta\right)$

1

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

1

Precalculus

Name: _____

Simplifying Trigonometric Expressions

Simplify each of the following.

1. $\sec x \cos x$

1

2. $\dfrac{\sin(-x)}{\cos(-x)}$

3. $\tan^2 x - \sec^2 x$

-1

4. $\dfrac{1-\cos^2 x}{\sin x}$

5. $\cot x \sin x$

cos x

6. $\dfrac{\sin\left(\frac{\pi}{2}-x\right)}{\cos\left(\frac{\pi}{2}-x\right)}$

7. $\sin x \sec x$

tan x

8. $\cos^2 x\left(\sec^2 x - 1\right)$

9. $\dfrac{\sec^2 x - 1}{\sin^2 x}$

sec²x

10. $\cot x \sec x$

11. $\sec^4 x - \tan^4 x$

sec²x + tan²x

12. $\dfrac{\cos^2\left(\frac{\pi}{2}-x\right)}{\cos x}$

13. $\tan\theta \csc\theta$

secθ

14. $\sin\theta\left(\csc\theta - \sin\theta\right)$

15. $\cos\beta \tan\beta$

sin β

16. $\sec\alpha \dfrac{\sin\alpha}{\tan\alpha}$

17. $\dfrac{\cot x}{\csc x}$

18. $\dfrac{\csc\theta}{\sec\theta}$

19. $\sec^2 x\left(1-\sin^2 x\right)$

20. $\dfrac{1}{\tan^2 x + 1}$