

Worksheet 7.1 #22

22. d. $\sin(3x)$ ↓

$$\begin{aligned} & \sin 5x \cos 2x - \cos 5x \sin 2x \\ &= \sin(5x-2x) = \sin 3x \quad (d) \end{aligned}$$

Jan 22-4:12 PM

WS 7.3

$$11. \cot^2 x - \cos^2 x = \cos^2 x \cot^2 x$$

$$\frac{\cos^2 x}{\sin^2 x} - \frac{\cos^2 x / \sin^2 x}{(\sin^2 x)}$$

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

$$\cos^2 x \cdot \frac{\cos^2 x}{\sin^2 x}$$

$$\cos^2 x \cot^2 x$$

Dec 20-8:42 AM

12. $\frac{\sec x}{\csc x} + \frac{\sin x}{\cos x} = 2\tan x$

$$\frac{\frac{1}{\cos x}}{\frac{1}{\sin x}} + \frac{\sin x}{\cos x}$$

$$\frac{1}{\cos x} \cdot \cos x \sin x + \frac{\sin x}{\cos x}$$

$$\frac{\sin x}{\cos x} + \frac{\sin x}{\cos x}$$

$$\tan x + \tan x$$

$$2\tan x$$

Dec 20-8:45 AM

13. $\frac{\sin x}{1 - \cot x} + \frac{\cos x}{1 - \tan x} = \cos x + \sin x$

$$\frac{\left(\frac{\sin x}{1 - \frac{\cos x}{\sin x}}\right) \frac{\sin x}{\sin x} + \left(\frac{\cos x}{1 - \frac{\sin x}{\cos x}}\right) \frac{\cos x}{\cos x}}$$

$$\frac{\sin^2 x}{\sin x - \cos x} + \frac{\cos^2 x}{\cos x - \sin x} \left(\frac{-1}{-1}\right)$$

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

$$\frac{(\sin x - \cos x)(\sin x + \cos x)}{(\sin x - \cos x)}$$

$$\sin x + \cos x$$

Dec 20-8:46 AM

14. $\frac{1+\sec x}{\tan x + \sin x} = \csc x$

$$\left(\frac{1 + \frac{1}{\cos x}}{\frac{\sin x}{\cos x} + \sin x} \right) \frac{\cos x}{\cos x}$$

$$\frac{\cos x + 1}{\sin x + \sin x \cos x}$$

$$\frac{\cos x + 1}{\sin x (1 + \cos x)}$$

$$\frac{1}{\sin x}$$

$$\csc x$$

Dec 20-8:49 AM

1. $\tan^2 \theta (1 + \cot^2 \theta) = \frac{1}{1 - \sin^2 \theta}$

$$\tan^2 \theta \cdot \csc^2 \theta$$

$$\frac{\sin^2 \theta}{\cos^2 \theta} \cdot \frac{1}{\sin^2 \theta}$$

$$\frac{1}{\cos^2 \theta}$$

$$\frac{1}{1 - \sin^2 \theta}$$

3. $\frac{1}{\tan \theta} + \frac{\tan \theta}{\tan \theta} = \frac{\sec^2 \theta}{\tan \theta}$

$$\frac{1 + \tan^2 \theta}{\tan \theta}$$

$$\frac{\sec^2 \theta}{\tan \theta}$$

2. $\sin 2\theta = 2 \cot \theta \sin^2 \theta$

$$2 \cdot \frac{\cos \theta}{\sin \theta} \cdot \sin^2 \theta$$

$$2 \cos \theta \sin \theta$$

$$\sin 2\theta$$

4. $\cos 2\theta + 2 \sin^2 \theta = 1$

$$1 - 2 \sin^2 \theta + 2 \sin^2 \theta$$

$$1$$

5. $\cot \theta + 1 = \csc \theta (\cos \theta + \sin \theta)$

$$\frac{1}{\sin \theta} \left(\frac{\cos \theta}{1} + \sin \theta \right)$$

$$\frac{\cos \theta}{\sin \theta} + 1$$

$$\cot \theta + 1$$

7. $\frac{1 + \csc \theta}{\cot \theta + \cos \theta} = \sec \theta$

$$\frac{1 + \frac{1}{\sin \theta}}{\frac{\cos \theta}{\sin \theta} + \cos \theta}$$

$$\frac{\frac{\sin \theta + 1}{\sin \theta}}{\frac{\cos \theta + \cos \theta \sin \theta}{\sin \theta}}$$

$$\frac{\sin \theta + 1}{\cos \theta (1 + \sin \theta)}$$

$$\frac{1}{\cos \theta}$$

$$\sec \theta$$

6. $\frac{\tan \theta - \cot \theta}{\sin \theta \cos \theta} = \sec^2 \theta - \csc^2 \theta$

$$\frac{\sin \theta \cos \theta \left(\frac{\sin \theta}{\cos \theta} - \frac{\cos \theta}{\sin \theta} \right)}{\sin \theta \cos \theta (\sin \theta \cos \theta)}$$

$$\frac{\sin^2 \theta - \cos^2 \theta}{\sin^2 \theta \cos^2 \theta}$$

$$\frac{\frac{\sin^2 \theta}{\sin^2 \theta \cos^2 \theta} - \frac{\cos^2 \theta}{\sin^2 \theta \cos^2 \theta}}{\frac{\cos^2 \theta}{\sin^2 \theta \cos^2 \theta} - \frac{\sin^2 \theta}{\sin^2 \theta \cos^2 \theta}}$$

$$\frac{1}{\sec^2 \theta} - \frac{1}{\csc^2 \theta}$$

8. $\frac{\sin^2 \theta + \cos^2 \theta + \cot^2 \theta}{1 + \tan^2 \theta} = \cot^2 \theta$

$$\frac{1 + \cot^2 \theta}{1 + \tan^2 \theta}$$

$$\frac{\csc^2 \theta}{\sec^2 \theta}$$

$$\frac{\cos^2 \theta}{\sin^2 \theta}$$

$$\cot^2 \theta$$

9. $\frac{\cos \theta}{1 - \sin \theta} = \frac{1 + \sin \theta}{\cos \theta}, \frac{1 - \sin \theta}{1 - \sin \theta}$

$$\frac{1 - \sin^2 \theta}{\cos \theta (1 - \sin \theta)}$$

$$\frac{\cos^2 \theta}{\cos \theta (1 - \sin \theta)}$$

$$\frac{\cos \theta}{1 - \sin \theta}$$

10. $1 + \cos \theta \sin \theta = \frac{\cos^3 \theta - \sin^3 \theta}{\cos \theta - \sin \theta}$

$$\frac{(\cos \theta - \sin \theta)(\cos^2 \theta + \cos \theta \sin \theta + \sin^2 \theta)}{\cos \theta - \sin \theta}$$

$$1 + \cos \theta \sin \theta$$

11. $\frac{1 + \sec \theta}{\tan \theta + \sin \theta} = \csc \theta$

$$\frac{1 + \frac{1}{\cos \theta}}{\frac{\sin \theta}{\cos \theta} + \sin \theta}$$

$$\frac{\frac{\cos \theta + 1}{\cos \theta}}{\frac{\sin \theta + \sin \theta \cos \theta}{\cos \theta}}$$

$$\frac{\cos \theta + 1}{\sin \theta (1 + \cos \theta)}$$

$$\frac{1}{\sin \theta}$$

$$\csc \theta$$

12. $\frac{1}{\cot^4 \theta} + \frac{1}{\cot^2 \theta} = \sec^4 \theta - \sec^2 \theta$

$$\tan^4 \theta + \tan^2 \theta$$

$$\tan^2 \theta (1 + \tan^2 \theta)$$

$$(\sec^2 \theta - 1)(\sec^2 \theta)$$

$$\sec^4 \theta - \sec^2 \theta$$

