

Name _____

1. If $\cos \theta = -\frac{2}{5}$ and θ lies in quadrant II, find $\csc \theta$.

2. If $\tan \beta = 3$ and β lies in quadrant I, find $\sec \beta$.

3. If $\sin \theta = \frac{2}{3}$ and θ lies in quadrant II, find $\cos \theta$.

4. If $\cot \theta = -2$ and θ lies in quadrant IV, find $\cos \theta$.

Simplify.

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

6. $\sin \theta \csc \theta + \tan \theta \cot \theta$

7. $\tan^2 \theta \cdot \cos^2 \theta$

8. $\frac{\cos^2 \theta + \sin^2 \theta}{\sin^2 \theta}$

9. $\csc \theta - \cos \theta \cot \theta$

10. $\cot \theta \tan \theta - \sec \theta \cos \theta$

11. $(1 + \cos \theta)(\csc \theta - \cot \theta)$

12. $(1 - \sin \theta)(\sec \theta + \tan \theta)$

Verify each identity.

$$13. \sin \theta \cot \theta \sec \theta = 1$$

$$14. \frac{\sin \theta}{1 - \cos^2 \theta} = \csc \theta$$

$$15. \frac{1}{\sin^2 \theta} - \frac{1}{\tan^2 \theta} = 1$$

$$16. \cos^2 \theta \tan^2 \theta + \sin^2 \theta \cot^2 \theta = 1$$

$$17. \sin \theta (1 + \cot^2 \theta) = \csc \theta$$

$$18. \frac{\cot \theta}{1 + \cot^2 \theta} = \cos \theta \sin \theta$$

$$19. \tan \theta \sin \theta + \cos \theta = \sec \theta$$

$$20. \frac{\tan^2 \theta}{\sec \theta + 1} = \frac{1 - \cos \theta}{\cos \theta}$$