

## 4.5

Properties of Trigonometric  
Functions Homework

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

**Problems 1 – 8,** Use the periodic properties of the trigonometric functions to find the exact value of each expression. Do not use a calculator.

|                                       |                                       |                                       |                      |
|---------------------------------------|---------------------------------------|---------------------------------------|----------------------|
| 1. $\sin\left(\frac{17\pi}{4}\right)$ | 2. $\cos(21\pi)$                      | 3. $\tan\left(\frac{19\pi}{6}\right)$ | 4. $\csc 390^\circ$  |
| 5. $\tan 405^\circ$                   | 6. $\sec\left(\frac{25\pi}{6}\right)$ | 7. $\csc\left(\frac{9\pi}{2}\right)$  | 8. $\cos(420^\circ)$ |

**Problems 9 – 12,** Name the quadrant in which the angle  $\theta$  lies.

|                                        |                                        |
|----------------------------------------|----------------------------------------|
| 9. $\cos \theta < 0, \sin \theta > 0$  | 10. $\sin \theta > 0, \tan \theta < 0$ |
| 11. $\cot \theta > 0, \sec \theta < 0$ | 12. $\sin \theta < 0, \cos \theta > 0$ |

**Problems 13 – 16,** Given sine and cosine values, find the exact values for each of the four remaining trigonometric functions.

|                                                                            |
|----------------------------------------------------------------------------|
| 13. $\sin \theta = \frac{2\sqrt{2}}{3}, \cos \theta = -\frac{1}{3}$        |
| 14. $\sin \theta = \frac{3}{5}, \cos \theta = -\frac{4}{5}$                |
| 15. $\sin \theta = -\frac{\sqrt{5}}{5}, \cos \theta = \frac{2\sqrt{5}}{5}$ |
| 16. $\sin \theta = -\frac{\sqrt{3}}{2}, \cos \theta = -\frac{1}{2}$        |

**Problems 17 – 20,** Find the exact value of the remaining trigonometric functions of  $\theta$ .

17.  $\sin \theta = \frac{5}{13}$ ;  $\theta$  in Quadrant II

18.  $\tan \theta = \frac{4}{3}$ ;  $\cos \theta < 0$

19.  $\sec \theta = 2$ ;  $\tan \theta < 0$

20.  $\cos \theta = -\frac{\sqrt{10}}{10}$ ;  $\pi < \theta < \frac{3\pi}{2}$

**Problems 21 – 26,** Use properties of the trigonometric functions to find the exact values of each expression.

21.  $\sin(75^\circ) \csc(75^\circ)$

22.  $\sec^2 47^\circ - \tan^2 47^\circ$

23.  $\cot 25^\circ - \frac{\cos 25^\circ}{\sin 25^\circ}$

24.  $\cos\left(-\frac{\pi}{18}\right) \cdot \sec\left(\frac{19\pi}{18}\right)$

25. If  $f(\theta) = \sin \theta$  and  $f(a) = \frac{1}{4}$ , find  $f(-a)$

26. If  $f(\theta) = \tan \theta$  and  $f(a) = -3$ , find  $f(a) + f(a + \pi)$