1.17 Unit Circle Trigonometry Extension Worksheet

S | A
T | C

Evaluate each without using a calculator.

1. $\sin x = \frac{\sqrt{3}}{2}$ $\frac{\pi}{2} \le x \le \pi$ $x = \frac{2\pi}{3}$

2. $\cos x = \frac{-\sqrt{2}}{2}$ $\pi \le x \le \frac{3\pi}{2}$ $x = 5\pi/4$

3. $\tan x = \sqrt{3}$ $\pi \le x \le \frac{3\pi}{2}$ $x = \frac{4\pi}{3}$

4. $\cot x$ = undefined $0 \le x \le \pi$ $x = 0, \pi$

5. $\csc x = -2$ $-\pi \le x \le -\frac{\pi}{2}$ $x = \frac{-5\pi}{6}$

6. $\sec x = -\frac{2\sqrt{3}}{3}$ $-\frac{3\pi}{2} \le x \le -\pi$ $x = \frac{-7\pi}{6}$

Evaluate each. Give two solutions.

7. $\sin x = \frac{-1}{2}$ $0^\circ \le x \le 360^\circ$ $x = 210^\circ, 330^\circ$

8. $\cot x = -1$ $0^\circ \le x \le 360^\circ$ $x = 135^\circ, 315^\circ$

9. $\tan x = 0$ $0^\circ \le x \le 360^\circ$ $x = 0, 180^\circ$ (or 360°)

10. $\sec x = -\sqrt{2}$ $0 \le x \le 2\pi$ $x = 3\pi/4, 5\pi/4$

11. $\csc x$ = undefined $0 \le x \le 2\pi$ $x = 0, \pi$ (or 2π)

12. $\cos x = \frac{\sqrt{3}}{2}$ $0 \le x \le 2\pi$ $x = \pi/6, 11\pi/6$

Complete each trigonometric expression.

13. $\cos 60^\circ = \sin$ 30

14. $\tan \frac{\pi}{4} = \sin$ $\pi/2$

15. $\sin \frac{2\pi}{3} = \cos$ $\pi/6$

16. $\cos \frac{7\pi}{6} = \sin$ $4\pi/3$

17. $\sin(-45^\circ) = \cos$ 135°

18. $\cos \frac{5\pi}{3} = \sin$ $\pi/6$