

Know your unit circle! Find the value of each expression without using a calculator or unit circle.

1. $\sin 60^\circ = \frac{\sqrt{3}}{2}$

2. $\cos 135^\circ = \frac{-\sqrt{2}}{2}$

3. $\sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$

4. $\cos\left(-\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$

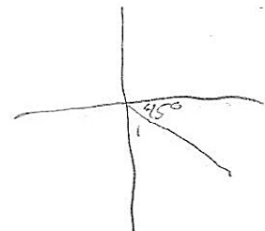
5. $\sin 225^\circ = \frac{-\sqrt{2}}{2}$

6. $\cos 150^\circ = \frac{-\sqrt{3}}{2}$

7. $\cos 90^\circ = 0$

8. $\cos\left(\frac{3\pi}{4}\right) = \frac{-\sqrt{2}}{2}$

9. $\sin \pi = 0$



Solve each equation over the domain of $0^\circ \leq \theta < 360^\circ$ without using a calculator.

10. $\cos \theta = \frac{1}{2}$

$\theta = 60^\circ, 300^\circ$

11. $\sin \theta = -\frac{1}{2}$

$\theta = 210^\circ, 330^\circ$

12. $\cos \theta = -\frac{\sqrt{3}}{2}$

$\theta = 150^\circ, 210^\circ$

Solve each equation over the domain of $0 \leq x < 2\pi$ without using a calculator.

13. $\tan x = 1$

$x = \frac{\pi}{4}, \frac{5\pi}{4}$

14. $\tan x = -1$

$x = \frac{3\pi}{4}, \frac{7\pi}{4}$

15. $\sin x = \frac{\sqrt{2}}{2}$

$x = \frac{\pi}{4}, \frac{3\pi}{4}$

Solve the equation over the domain of $0^\circ \leq \theta < 360^\circ$. Round answers to the nearest tenth of a degree.

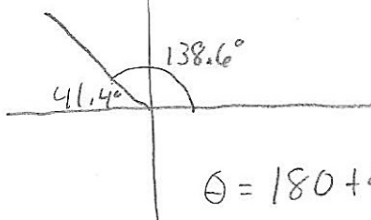
16. $4 \cos \theta + 8 = 5$

$4 \cos \theta = -3$

$\cos \theta = \frac{-3}{4}$

$\theta = \cos^{-1}\left(\frac{-3}{4}\right)$

$\theta = 138.6^\circ, 221.4^\circ$



17. $5 \sin 3\theta = 3$

$\sin 3\theta = \frac{3}{5}$

$3\theta = \sin^{-1}\left(\frac{3}{5}\right)$

$3\theta = 36.9^\circ, 143.1^\circ, 396.9^\circ, 503.1^\circ, 756.9^\circ, 863.1^\circ$

$\theta = 12.3^\circ, 47.7^\circ, 132.3^\circ, 167.7^\circ, 252.3^\circ, 287.7^\circ$

Solve the equation over the domain $0 \leq x < 2\pi$. Round answers to the nearest tenth of a radian.

18. $4 \sin x - 4 = -1$

$$4 \sin x = 3$$

$$\sin x = \frac{3}{4}$$

$$x = \sin^{-1}\left(\frac{3}{4}\right)$$

$$x = 0.85, 2.29$$

19. $3 \cos 2x = 1$

$$\cos 2x = \frac{1}{3}$$

$$2x = \cos^{-1}\left(\frac{1}{3}\right)$$

$$2x = 1.23, 5.05, 7.51, 11.33$$

$$x = 0.62, 2.53, 3.76, 5.67$$

20. Which equation is represented on the graph shown below?

1) $y = 3 \sin x$
 2) $y = -3 \sin x$
 3) $y = 3 \cos x$
 4) $y = -\sin 3x$

21. Which equation represents the graph below?

1) $y = -2 \sin 2x$
 2) $y = -2 \sin \frac{1}{2} x$
 3) $y = -2 \cos 2x$
 4) $y = -2 \cos \frac{1}{2} x$

22. Which equation is represented in the graph below?

1) $y = 2 \cos 2x$
 2) $y = \cos \frac{1}{2} 2x$
 3) $y = 2 \cos \frac{1}{2} x$
 4) $y = \frac{1}{2} \cos \frac{1}{2} x$

23. Which equation is represented by the accompanying graph?

1) $y = 2 \sin \frac{1}{2} x$
 2) $y = 2 \sin x$
 3) $y = \sin \frac{1}{2} x$
 4) $y = \sin 2x$