

Solving Simple Trigonometric Equations

Simple????? Simple for you!

Jan 4-10:55 AM

Solve for values of  $\theta$  between  $0^\circ$  and  $360^\circ$ .

$$\sin \theta = 0.3475$$

Q1  $20^\circ$   $\uparrow$  +  
 Q2  $160^\circ$   $\swarrow$  always positive)  
 Ref L:  $\sin^{-1}(0.3475) = 20^\circ$   
 $\therefore \theta = 20^\circ + 160^\circ$

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Solve for values of  $\theta$  between  $0^\circ$  and  $360^\circ$ .

$$\cos \theta = +0.8231$$

Q1  $34.6^\circ$   
 Q4  $325.4^\circ$   
 Ref:  $\cos^{-1}(0.8231) = 34.6^\circ$   
 $\therefore \theta = 34.6^\circ + 325.4^\circ$

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Solve for values of  $\theta$  between  $0^\circ$  and  $360^\circ$ .

$$\sin \theta = -0.5429$$

Q3  $212.9^\circ$   
 Q4  $327.1^\circ$   
 Ref L:  $\sin^{-1}(0.5429) = 32.9^\circ$  (acute, posit.)  
 $\therefore \theta = 212.9^\circ + 327.1^\circ$

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Solve for values of  $\theta$  between  $0^\circ$  and  $360^\circ$ .

$$\cos \theta = -0.6227$$

$$Q2 \quad 128.5^\circ$$

$$Q3 \quad 231.5^\circ$$

$$\text{ref}L = \cos^{-1}(0.6227) = 51.5^\circ$$

$$\therefore \theta = 128.5^\circ + 231.5^\circ$$

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Solve for values of  $\theta$  between  $0^\circ$  and  $720^\circ$ .

$$\sin \theta = 0.1256$$

$$Q1 \quad 7.2^\circ, 367.2^\circ$$

$$Q2 \quad 172.8^\circ, 532.8^\circ$$

$$\text{ref}L = \sin^{-1}(0.1256) = 7.2^\circ$$

$$\therefore \theta = 7.2^\circ, 172.8^\circ, 367.2^\circ + 532.8^\circ$$

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Solve for values of  $\theta$  between  $0^\circ$  and  $720^\circ$ .

$$\cos \theta = 0.8410$$

$$Q1 \quad 32.8^\circ, 392.8^\circ$$

$$Q4 \quad 327.2^\circ, 687.2^\circ$$

$$\text{ref}L = \cos^{-1}(0.8410) = 32.8^\circ$$

$$\therefore \theta =$$

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Solve for values of  $\theta$  between  $-360^\circ$  and  $360^\circ$ .

$$\sin \theta = -0.7563$$

$$Q3 \quad 229.1^\circ, -130.9^\circ$$

$$Q4 \quad 310.1^\circ, -49.1^\circ$$

$$\text{ref}L = \sin^{-1}(0.7563) = 49.1^\circ$$

$$\therefore \theta = 229.1^\circ, 310.1^\circ, -130.9^\circ + -49.1^\circ$$

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Solve for values of  $\theta$  between  $-720^\circ$  and  $1080^\circ$ .

$$\cos \theta = -0.4821$$

Q2  $118.8^\circ, 478.8^\circ, 838.8^\circ, -241.2^\circ$   
 Q3  $241.2^\circ, 601.2^\circ, 961.2^\circ, -118.8^\circ$   
 $\text{ref} \angle = \cos^{-1}(0.4821) = 61.2^\circ$      $-478.8^\circ$

$$\therefore \theta =$$

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$$0^\circ \leq x < 360^\circ$$

$$\sin x = -\frac{\sqrt{3}}{2}$$

Q3  $240^\circ$   
 Q4  $300^\circ$

$$\text{ref} \angle = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = 60^\circ$$

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$$-360^\circ \leq x \leq 360^\circ$$

$$\cos x = -\frac{\sqrt{2}}{2}$$

Q2  $135^\circ, -225^\circ$   
 Q3  $225^\circ, -135^\circ$

$$\text{ref} \angle = \cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = 45^\circ$$

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$$-360^\circ \leq \theta < 360^\circ$$

①  $\sin \theta = 0.1113$

②  $\cos \theta = 0.4578$

③  $\sin \theta = -0.4175$

④  $\cos \theta = -0.9147$

⑤  $\sin \theta = \frac{\sqrt{2}}{2}$     ⑦  $\sin \theta = -\frac{1}{2}$

⑥  $\cos \theta = \frac{\sqrt{3}}{2}$     ⑧  $\cos \theta = -\frac{1}{\sqrt{2}}$

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