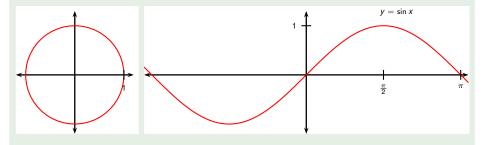
Precalculus The inequality $b \ge \sin \theta \ge a$

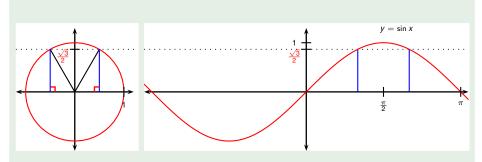
Todor Milev

2019

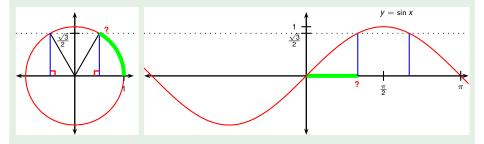
Solve. Among your solutions, find those between -360° and 450° . $\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$



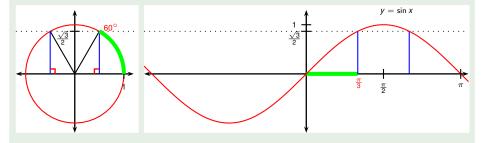
Solve. Among your solutions, find those between -360° and 450° . $\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$



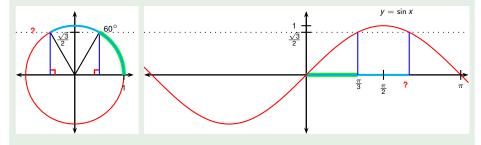




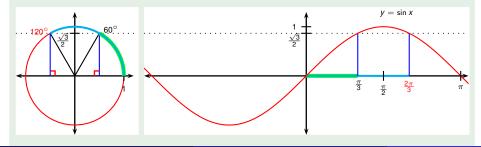




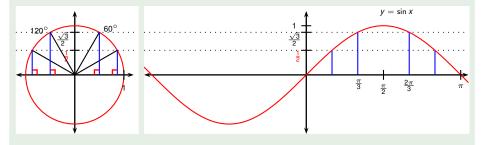
Solve. Among your solutions, find those between -360° and 450° . $\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$



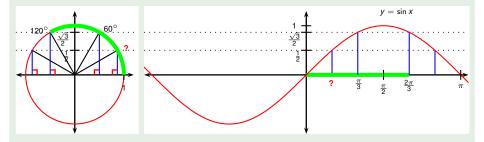
Solve. Among your solutions, find those between -360° and 450° . $\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$



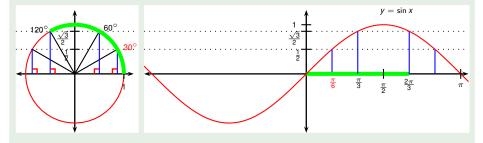
$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$



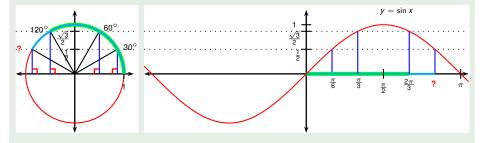
Solve. Among your solutions, find those between -360° and $450^{\circ}.$



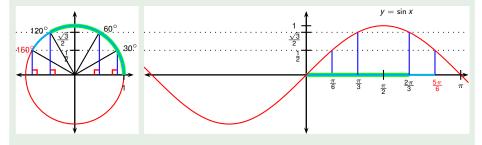
Solve. Among your solutions, find those between -360° and $450^{\circ}.$



Solve. Among your solutions, find those between -360° and $450^{\circ}.$

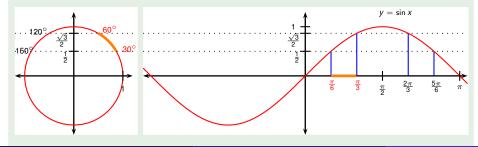


Solve. Among your solutions, find those between -360° and $450^{\circ}.$



$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$

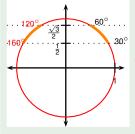
$$x \in [30^{\circ}, 60^{\circ})$$

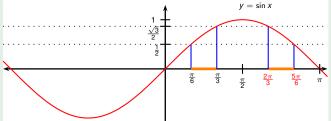


Solve. Among your solutions, find those between -360° and 450° .

$$\begin{array}{l} \frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2} \\ x \in [30^{\circ}] \end{array}$$

)



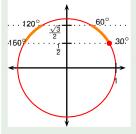


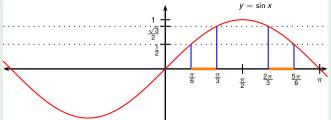
Solve. Among your solutions, find those between -360° and 450° .

$$\frac{1}{2} \leq \sin \theta < \frac{\sqrt{3}}{2}$$
$$x \in [30^{\circ}]$$

$$,150^{\circ}$$

1





Solve. Among your solutions, find those between -360° and 450° .

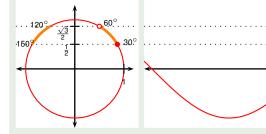
$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$
$$x \in [30^{\circ}]$$

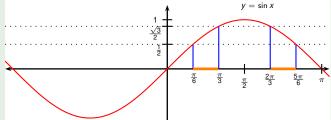
,60°

) ∪ (120°

,150°

1





Solve. Among your solutions, find those between -360° and 450° .

$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$

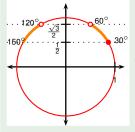
$$x \in [30^{\circ}]$$

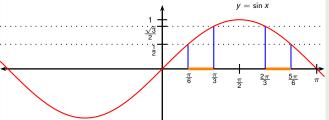
,60°

) ∪ **(120**°

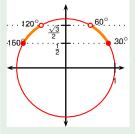
, 150°

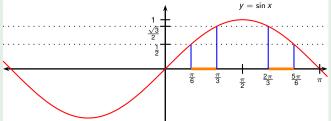
]



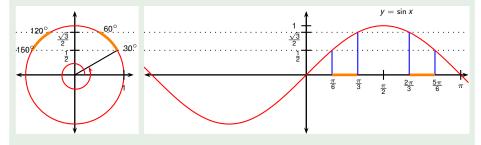


$$\frac{1}{2} \leq \sin \theta < \frac{\sqrt{3}}{2}$$
$$x \in [30^{\circ}]$$





$$\begin{array}{l} \frac{1}{2} \leq \sin \theta < \frac{\sqrt{3}}{2} \\ x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}] \end{array}$$



Solve. Among your solutions, find those between -360° and 450° .

$$\tfrac{1}{2}{\le}{\sin\theta}<\tfrac{\sqrt{3}}{2}$$

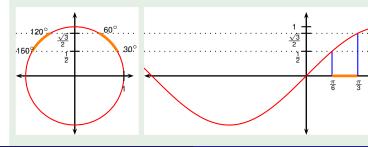
$$x \in \frac{30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ})}{(120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ})}$$

$$x \in$$

$$[30^{\circ}, 60^{\circ}) \cup (120^{\circ}, 150^{\circ}]$$

$$k = 0$$

 $y = \sin x$



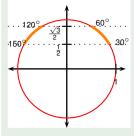
$$\begin{array}{l} \frac{1}{2} \leq \sin \theta < \frac{\sqrt{3}}{2} \\ x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}] \end{array}$$

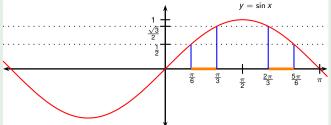
$$x \in$$

$$[30^{\circ}, 60^{\circ}) \cup (120^{\circ}, 150^{\circ}] \cup [390^{\circ}, 420^{\circ}) \cup (480^{\circ}, 510^{\circ}]$$

$$k=0$$

 $k=1$





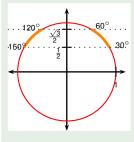
$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$

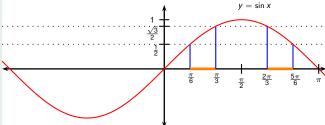
$$x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}]$$

$$x \in$$

$$[30^{\circ}, 60^{\circ}) \cup (120^{\circ}, 150^{\circ}] \cup [390^{\circ}, 420^{\circ}) \cup (480^{\circ}, 510^{\circ}]$$

$$k=0$$
 $k=1$



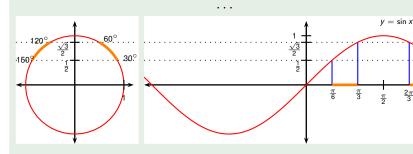


Solve. Among your solutions, find those between -360° and 450° .

$$\begin{array}{l} \frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2} \\ x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}] \end{array}$$

 $y = \sin x$ 150 $\frac{\sqrt{3}}{2}$ $\frac{\sqrt{3}}{2}$ $\frac{\sqrt{3}}{2}$ $\frac{\pi}{6}$ $\frac{\pi}{3}$ $\frac{\pi}{2}$ $\frac{2\pi}{3}$ $\frac{5\pi}{6}$ π

$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}
x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}]$$



Solve. Among your solutions, find those between -360° and 450° .

$$\frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2}$$

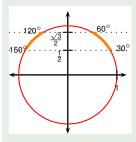
$$x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}]$$

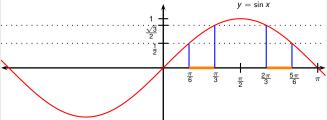
$$\begin{array}{c} \cup \left[-690^{\circ}, -660^{\circ} \right) \cup \left(-600^{\circ}, -570^{\circ} \right] \\ \cup \left[-330^{\circ}, -300^{\circ} \right) \cup \left(-240^{\circ}, -210^{\circ} \right] \\ \cup \left[30^{\circ}, 60^{\circ} \right) \cup \left(120^{\circ}, 150^{\circ} \right] \\ \cup \left[390^{\circ}, 420^{\circ} \right) \cup \left(480^{\circ}, 510^{\circ} \right] \end{array}$$

$$\begin{vmatrix} k = -2 \\ k = -1 \\ k = 0 \end{vmatrix}$$

k = 1

 $x \in$

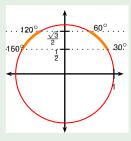


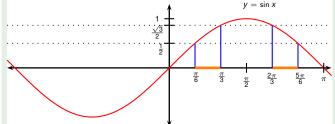


$$\tfrac{1}{2}{\le}{\sin\theta}<\tfrac{\sqrt{3}}{2}$$

$$x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}]$$

$$\begin{array}{cccc}
 & \cup \left[-690^{\circ}, -660^{\circ}\right) \cup \left(-600^{\circ}, -570^{\circ}\right] & & k = -2 \\
 & \cup \left[-330^{\circ}, -300^{\circ}\right) \cup \left(-240^{\circ}, -210^{\circ}\right] & & k = -1 \\
 & \times \in & \cup \left[30^{\circ}, 60^{\circ}\right) \cup \left(120^{\circ}, 150^{\circ}\right] & & k = 0 \\
 & \cup \left[390^{\circ}, 420^{\circ}\right) \cup \left(\underline{480^{\circ}, 510^{\circ}}\right] & & k = 1
\end{array}$$





 $x \in$

Solve. Among your solutions, find those between -360° and 450° .

$$\begin{array}{l} \frac{1}{2} \le \sin \theta < \frac{\sqrt{3}}{2} \\ x \in [30^{\circ} + k360^{\circ}, 60^{\circ} + k360^{\circ}) \cup (120^{\circ} + k360^{\circ}, 150^{\circ} + k360^{\circ}] \end{array}$$

In radians:

$$\mathbf{X} \in \left[-\frac{11\pi}{6}, -\frac{5\pi}{3} \right) \cup \left[-\frac{4\pi}{3}, -\frac{7\pi}{6} \right) \cup \left[\frac{\pi}{6}, \frac{\pi}{3} \right) \cup \left[\frac{2\pi}{3}, \frac{5\pi}{6} \right) \cup \left[\frac{13\pi}{6}, \frac{7\pi}{3} \right)$$