

Precalculus

The equation $\sin \theta = a$, general

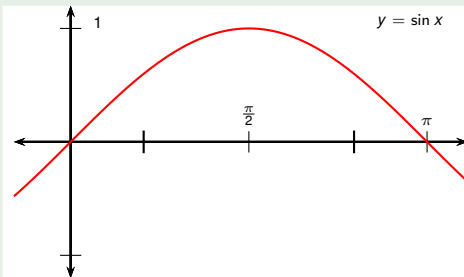
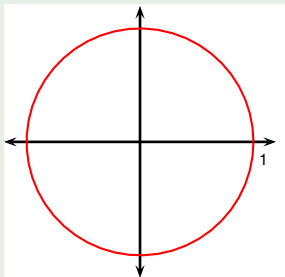
Todor Milev

2019

Example

Find all solutions of the equation.

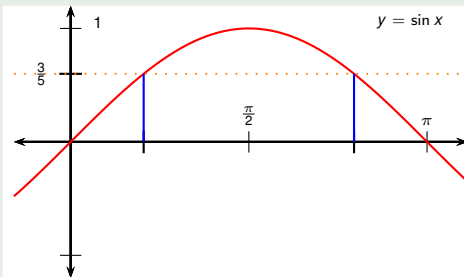
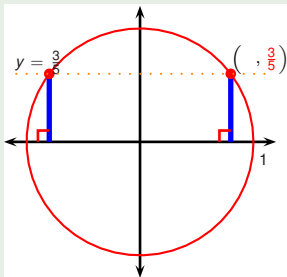
$$\sin \theta = \frac{3}{5}$$



Example

Find all solutions of the equation.

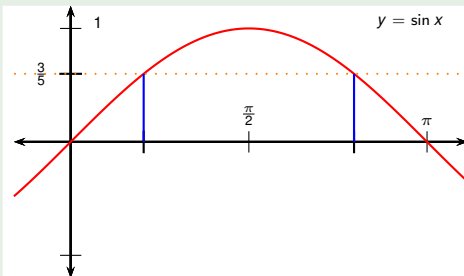
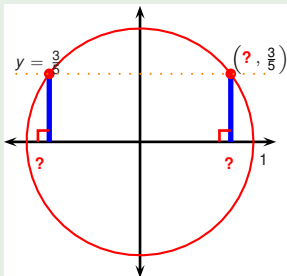
$$\sin \theta = \frac{3}{5}$$



Example

Find all solutions of the equation.

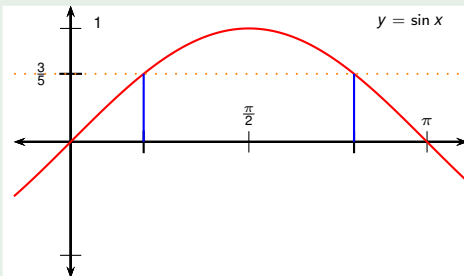
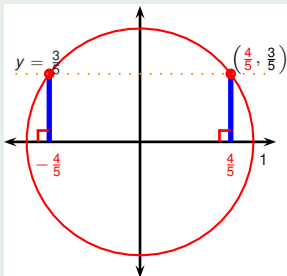
$$\sin \theta = \frac{3}{5}$$



Example

Find all solutions of the equation.

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

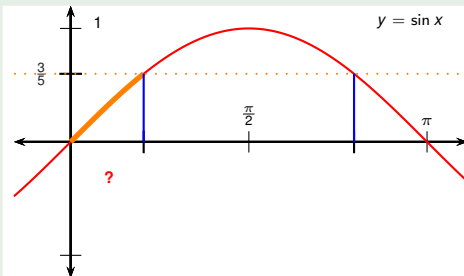
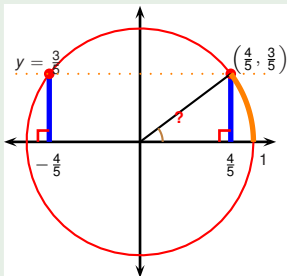


Example

Find all solutions of the equation.

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

$$\theta = ?$$



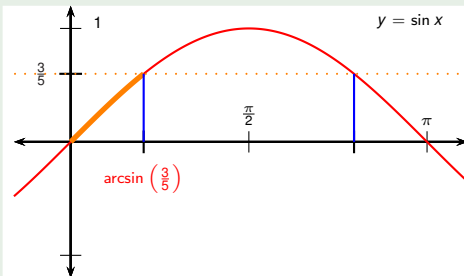
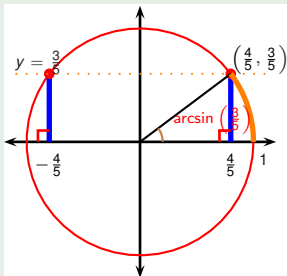
Example

Find all solutions of the equation.

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

$$\theta = \arcsin\left(\frac{3}{5}\right)$$

\arcsin implies radians



Example

Find all solutions of the equation.

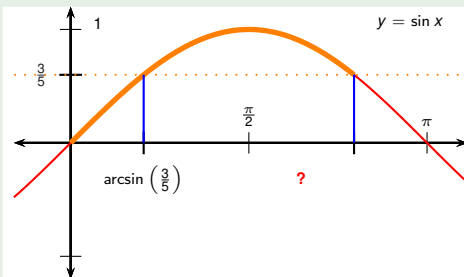
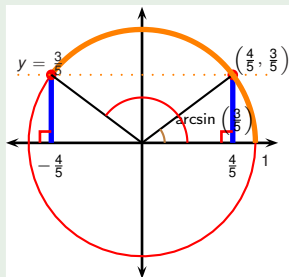
$$\sin \theta = \frac{3}{5}$$

$$\theta = \arcsin\left(\frac{3}{5}\right)$$

or

?

\arcsin implies radians



Example

Find all solutions of the equation.

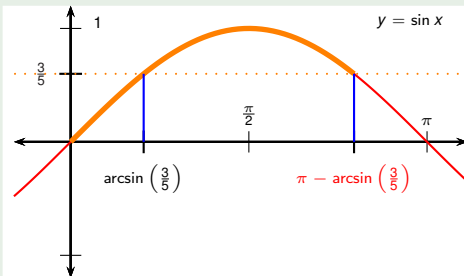
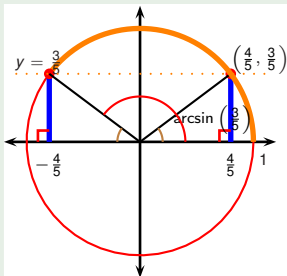
$$\sin \theta = \frac{3}{5}$$

$$\theta = \arcsin\left(\frac{3}{5}\right)$$

or

?

\arcsin implies radians



Example

Find all solutions of the equation.

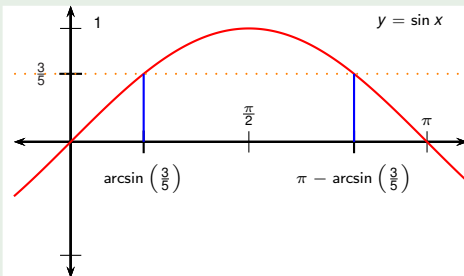
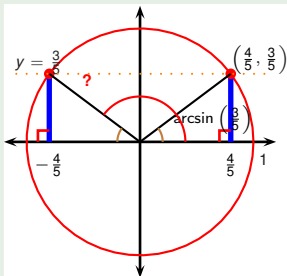
$$\sin \theta = \frac{3}{5}$$

$$\theta = \arcsin\left(\frac{3}{5}\right)$$

or

?

\arcsin implies radians



Example

Find all solutions of the equation.

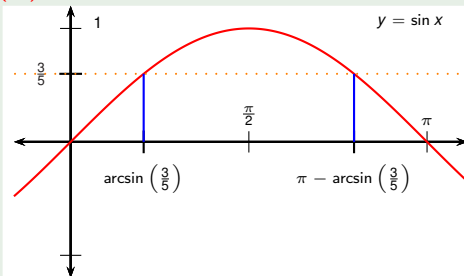
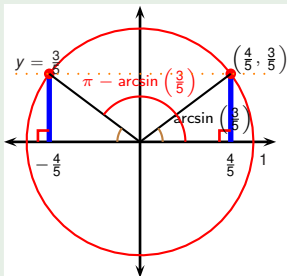
$$\sin \theta = \frac{3}{5}$$

$$\theta = \arcsin\left(\frac{3}{5}\right)$$

\arcsin implies radians

or

$$\pi - \arcsin\left(\frac{3}{5}\right)$$



Example

Find all solutions of the equation.

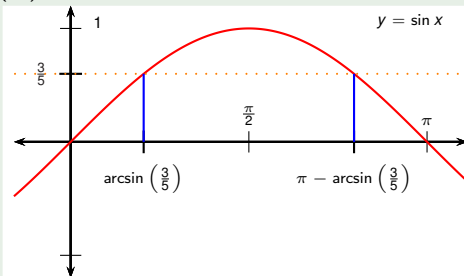
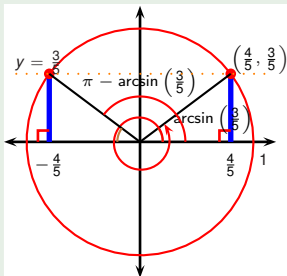
$$\sin \theta = \frac{3}{5}$$

$$\theta = \arcsin\left(\frac{3}{5}\right) + k \cdot (2\pi)$$

| arcsin implies radians

or

$$\pi - \arcsin\left(\frac{3}{5}\right)$$



Example

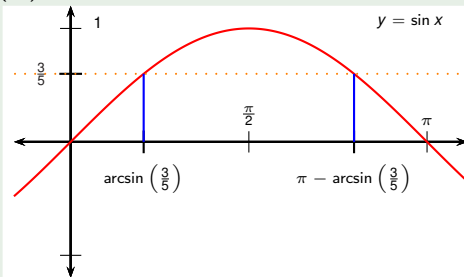
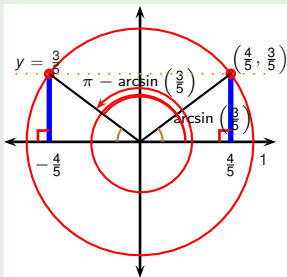
Find all solutions of the equation.

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

$$\theta = \arcsin\left(\frac{3}{5}\right) + k \cdot (2\pi) \quad \left| \text{arcsin implies radians} \right.$$

or

$$\pi - \arcsin\left(\frac{3}{5}\right) + k \cdot (2\pi)$$



Example

Find all solutions of the equation.

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

$$\theta = \arcsin\left(\frac{3}{5}\right) + k \cdot (2\pi)$$

\arcsin implies radians

or

$$\pi - \arcsin\left(\frac{3}{5}\right) + k \cdot (2\pi)$$

