

# Calculus II

## Inverse trig and special angles

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Find  $\arcsin\left(\frac{1}{2}\right)$ .

## Observation

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## Example

Find  $\arcsin\left(\frac{1}{2}\right)$ .

- $\sin\left(\textcolor{red}{?}\right) = \frac{1}{2}.$

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## Example

Find  $\arcsin\left(\frac{1}{2}\right)$ .

- $\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$ .



## Observation

- $\arcsin y =$  *the appropriate angle whose sine equals  $y$ .*
- *Important: the output angle must lie in the interval  $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ .*

## Example

Find  $\arcsin\left(\frac{1}{2}\right)$ .

- $\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$ .
- $-\frac{\pi}{2} \leq \frac{\pi}{6} \leq \frac{\pi}{2}$ .

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- *Important: the output angle must lie in the interval  $[-\frac{\pi}{2}, \frac{\pi}{2}]$ .*

## Example

Find  $\arcsin\left(\frac{1}{2}\right)$ .

- $\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$ .
- $-\frac{\pi}{2} \leq \frac{\pi}{6} \leq \frac{\pi}{2}$ .
- Therefore  $\arcsin\left(\frac{1}{2}\right) = \frac{\pi}{6}$ .