

# Precalculus

## Simplify $\arcsin(\sin(x))$

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## Example

Find  $\arcsin(\sin(1.5))$ .

- $\frac{\pi}{2} \approx 1.57$ .
- Therefore  $-\frac{\pi}{2} \leq 1.5 \leq \frac{\pi}{2}$ .
- Therefore  $\arcsin(\sin 1.5) = 1.5$ .

## Example

Find  $\arcsin(\sin 2)$ .

- 2 is not between  $-\frac{\pi}{2}$  and  $\frac{\pi}{2}$ .
- We need the angle  $a$  between  $-\frac{\pi}{2}$  and  $\frac{\pi}{2}$  for which  $\sin 2 = \sin a$ .

$$a = \pi - 2.$$

$$\begin{aligned} \text{Therefore } \arcsin(\sin 2) &= \arcsin(\sin a) \\ &= a = \pi - 2. \end{aligned}$$

