Calculus II
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 $\sin 2 = \sin a$.

$$a = \pi - 2.$$
$$\text{Therefore} \quad \arcsin(\sin 2) = \arcsin(\sin a)$$
$$= a = \pi - 2.$$