

Warmup 2: Use the sum or difference formula to find the exact value of $\sin 255^\circ$.

$$\sin 255$$

$$\sin(210^\circ + 45^\circ)$$

$$\sin(A + B)$$

$$\sin A \cos B + \cos A \sin B$$

$$\sin 210^\circ \cos 45^\circ + \cos 210^\circ \sin 45^\circ$$

$$-\frac{1}{2} \cdot \frac{\sqrt{2}}{2} + \frac{-\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2}$$

$$-\frac{\sqrt{2}}{4} + \frac{-\sqrt{6}}{4}$$

$$\boxed{\frac{-\sqrt{2} - \sqrt{6}}{4}}$$

$$\text{or } \boxed{\frac{-\sqrt{6} - \sqrt{2}}{4}}$$