

Find $4 \cdot \sin(22.5^\circ) \cdot \cos\left(\frac{\pi}{8}\right)$.

$$4 \sin(22.5^\circ) \cos\left(\frac{\pi}{8}\right) = 4 \sin\left(\frac{\pi}{8}\right) \cos\left(\frac{\pi}{8}\right) = 2 \cdot \left[2 \sin\left(\frac{\pi/4}{2}\right) \cos\left(\frac{\pi/4}{2}\right)\right] = 2 \sin\left(\frac{\pi}{4}\right) = \frac{2}{\sqrt{2}} = \sqrt{2}$$