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10. The vectors $\vec{v}$ and $\vec{w}$ live in the xy-plane. The vector $\vec{v}$ has a magnitude of 60 and points in the direction $\frac{\pi}{12}$ radians. The vector $\vec{w}$ has a magnitude of 80 and points in the direction $\frac{4\pi}{7}$ radians. How long is $\vec{v} + \vec{w}$? (Angles are measured counterclockwise starting at the positive x-axis. You may leave "cos" and/or "sin" in your answer.)

$\vec{V} = 60\cos(\frac{\pi}{12})\vec{i} + 60\sin(\frac{\pi}{12})\vec{j}$

$\vec{w} = 80\cos(\frac{4\pi}{7})\vec{i} + 80\sin(\frac{4\pi}{7})\vec{j}$

$\vec{v}+\vec{w} = \left(60\cos(\frac{\pi}{12}) + 80\cos(\frac{4\pi}{7})\right)\vec{i} + \left(60\sin\frac{\pi}{12} + 80\sin\frac{4\pi}{7}\right)\vec{j}$

$\|\vec{v}+\vec{w}\| = \sqrt{\left(60\cos(\frac{\pi}{12}) + 80\cos(\frac{4\pi}{7})\right)^2 + \left(60\sin\frac{\pi}{12} + 80\sin\frac{4\pi}{7}\right)^2}$