Math 241 Class Exercise: Tangent Vectors to Parametric Curves Con'td.
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1. A curve C has the property that every position vector $\vec{r}(t)$ is perpendicular to the tangent vector $\vec{r'}(t)$. Show C lies on a sphere with center $(0,0,0)$

2. Find the length of the curve of intersection of the cylinder $4x^2 + y^2 = 4$ and the plane $x + y + z = 2$. Plot the curve by hand and visualize in Matlab.

3. Using Matlab, graph the curve with parametric equations $x = \sin t$, $y = \sin 2t$, and $z = \sin 3t$. Find the total length of this curve to four decimal places.