Math 53 (Multivariable Calculus), Section 102 & 108
Week 6, Monday
Sep 26, 2022
For the other materials: seewoo5.github.io/teaching/2022Fall

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1. Find length of the curve $\mathbf{r}(t) = 2t\mathbf{i} + 3\cos t\mathbf{j} + 3\sin t\mathbf{k}$ for $0 \leq t \leq 2\pi$.
2. The position of a particle is given by $\mathbf{r}(t) = \langle t^2, 5t, t^2 - 16t\rangle$. When is the speed minimum?
3. Assume that a particle moves with a constant speed. Show that its velocity and acceleration are always orthogonal. (Hint: consider $\frac{d}{dt}|\mathbf{r}'(t)|^2$.)