

Section 13.1 #6, 13, 25-30, 36

Section 13.2 #26, 36, 42, 47, 53, 59

Here is one last problem. Let $\vec{r}(t)$ be a parametrized curve in \mathbb{R}^n .

1. Differentiate $|\vec{r}|^2$ in two different ways, to derive an expression for $|\vec{r}'|'$ in terms of $|\vec{r}'|$ and the cosine of a certain angle.
2. Use that expression to give an explicit example, for any $n \geq 2$ you like, where $|\vec{r}'|' \neq |\vec{r}''|$.

(I hope that, after doing this problem, you will have a clear vision of the distinction between $|\vec{r}'|'$ and $|\vec{r}''|$, and that you will never be tempted to conflate them.)