

A. Due at the start of class on Day 6 (but not collected): Complete these exercises to practice basic skills. If you want more practice, then do more exercises from the book.

Section 13.1 Exercises 8, 13, 16, 17.

Section 13.2 Exercises 5, 10, 11, 15, 20, 25-26, 39, 45, 47.

B. Due at the start of class on Day 9, as part of your weekly homework packet: Submit polished solutions, including all necessary work and no unnecessary work, in the order assigned.

1. Differentiate  $|\vec{r}(t)|^2$  in two different ways, to derive an expression for  $|\vec{r}'|$  in terms of  $|\vec{r}'|$  and the cosine of a certain angle. Use this result to give an example where  $|\vec{r}'| \neq |\vec{r}''|$ .
2. 13.2 Exercise 65. (This idea becomes important later, when we do Lagrange multipliers.)
3. 13.2 Exercise 66. (You don't need to know any physics, to learn this tiny slice of physics.)