

Physics 115B Fourth Problem Set

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1. Exercise 10.1.1, page 251 of your text.
2. The transformation of variables described at the top of page 257 is effective for potentials slightly more general than those that satisfy Eq. (10.1.36) on page 256. For example, you might consider the case of two particles with an interaction potential of the form $V(x_1 - x_2)$, which are in the earth's gravitational field at low elevations. What is the general condition for the decoupling of center-of-mass and relative coordinates? You can use a purely classical argument, like that on the last 1/2 of page 53 of the notes.
3. Exercise 10.1.3, page 258 of your text.
4. Exercise 10.2.1, page 259 of your text.
5. Exercise 10.2.3, page 260 of your text.