

Reading: Chapter 3

Problems:

1. Goldstein, Problem 3-1.
2. The addition to the potential energy  $V = -k/r$  of a small correction  $\delta V(r)$  makes the bounded orbits deviate from closed; after each turn, the perihelion shifts by a small angle  $\delta\phi$ . Find  $\delta\phi$  for (a)  $\delta V = \beta/r^2$  and (b)  $\delta V = \gamma/r^3$ .
3. Goldstein, Problem 3-12.
4. Goldstein, Problem 3-18.
5. Goldstein, Problem 3-31.