Problem 8.3.  (10 points)

Problem 8.13  (10 points)

Problem 8.19.  (10 points)

Problem 8.23 (a, b).  (10 points)

Problem A.  (10 points)

(a) Find the force law for a central-force field that allows a particle to move in a spiral orbit given by $r = k\varphi^2$, where $k$ is a constant.
(b) Determine $r(t)$ and $\varphi(t)$
(c) What is the total energy of the orbit (assume $U(\infty) = 0$).