**Problem 1.** An object that is originally at location (-15, 0, 0) m moves to a location (-30, 0, 0) m. While it is moving it is acted on by a constant force of (22, 0, 0) N.

1 (a) How much work is done on the object by this force?

(b) Does the kinetic energy of the object increase or decrease?

(c) A different object moves from location (-30, 0, 0) m to location (-15, 0, 0) m. While it is moving it is acted on by a constant force of (22, 0, 0) N. How much work is done on the second object by this force?

(d) Does the kinetic energy of the object increase or decrease?

**Problem 2.** Draw curves for the kinetic energy and potential energy on a graph of energy vs. radial separation between a ball thrown up in the air and the Earth in the following two situations:

(a) The ball is thrown up at some initial velocity greater than its escape velocity. In addition to the curves for K and U, draw the curve for K + U in this situation, where K is kinetic energy and U is potential energy. What values do K and U approach for large radial separation, respectively?

(b) The ball is thrown up at some initial velocity less than its escape velocity. Again, draw the curve for K + U in this situation as well. Indicate the maximum value of r (the radial separation) between the ball and the Earth on your graph.