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

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 $(-30,0,0) \mathrm{m}$ to location ( -15 , $0,0) \mathrm{m}$. While it is moving it is acted on by a constant force of $(22,0,0) \mathrm{N}$. 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.

