Homework 3
Due Friday the 28 of September

**HW problem** : A particle of mass $m$ slides down an inclined plane under the influence of gravity. The particle is starting its motion from rest. Find the time dependence of the velocity, $v(t)$, if the motion is resisted by a force $F = kmf(v)$, with constant $k$ for

1. (5 points) $f(v) = v^2$. Find the time required to move a distance $d$.
2. (5 points) $f(v) = e^{\beta v}$ where $\beta$ is a constant.

Hint (for 2): Make use of the identity

$$\int dx \frac{1}{1 - ue^x} = x - \ln(1 - ue^x) \quad (1)$$