1) Evaluate this integral:

\[
\int_{t=0}^{t=1} \left( \frac{t^3}{2} - 3t^2 \right) dt =
\]

2) A truck covers 30.0 m in 4.50 s while smoothly slowing down to a final speed of 2.80 m/s. (a) Find the truck's original speed (b) Find its acceleration. (c) Now, write the function of position versus time, take its derivative, and verify that the speed at t=4.50 s is 2.80 m/s.