1. Using equation 5.43 calculate the nuclear form factor, $F(q^2)$, for a homogeneous sphere of radius $R$.

2. Given an incident beam of momentum 3.0 GeV/c, what is the maximum possible value of $q^2$, the 4-momentum transfer, for

(a) A beam of electrons making elastic collisions in a proton target.
(b) A beam of $\pi^-$ mesons making elastic collisions with electrons in some target.

Hint: For each case, find the CM momentum, and compute $q^2$ in the CM, and find its maximum value. Since $q^2$ is Lorentz invariant, that is the answer.