A photon collides with a stationary electron. If the photon scatters at an angle $\theta$, show that the resulting wavelength, $\lambda'$, is given in terms of the original wavelength, $\lambda$, by

$$\lambda' = \lambda + \frac{h}{mc}(1 - \cos \theta),$$

where $m$ is the mass of the electron. Note: The energy of a photon is $E = h\nu = hc/\lambda$. 

Week 69  (1/5/04)

Compton scattering