

48E1  
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2. The Compton wavelength,  $\lambda_c$ , of a particle of mass  $m$  is defined as:  $\lambda_c = \frac{h}{mc}$ .

- a) Calculate the Compton wavelength of a proton.
- b) Calculate the energy of a photon that has the same wavelength as that found in part (a).
- c) Show, in general, that a photon with a wavelength equal to the Compton wavelength of a particle has an energy that is equal to the rest mass energy of the particle.