

1) Krane Chapter 13, problem 18

Also, show in general, the reaction  $\gamma \rightarrow e^+e^-$  is not possible. You need to have the photon interact with another particle in order to conserve both energy and momentum.

2) Krane Chapter 13, problem 25

3) Krane Chapter 15, problem 8

4) Krane Chapter 15, problem 10

You will have to use the Maxwell-Boltzmann distribution for this one.