HW5

Reading assignment: Einstein: 18-22.
Reading assignment: Feynman 6.1-6.3 on curved space.
For the problems below, please show all work!

1. By Monday at 6pm, please email me the topic of your project.

2. Calculate the energy and momentum of two photons (the particle of light) produced by the annihilation of an electron and positron, both of which are at rest.

3. Consequences of curved space (OPTIONAL - requires trig and some patience). Suppose you draw a triangle on a sphere of radius r where one of the corners is located at the north pole. Derive a formula for the sum of the triangle's angles if one edge of the triangle is located on the sphere's equator. What is the area of this triangle? How could you use this information to determine if you lived in a curved space (as general relativity predicts)? BONUS: Relate the triangle's area to the sum of it angles.