Physics 11 - Practice Questions

Unit 8.1

1. An observer in a fixed frame of reference is watching an event that takes time to to occur, according to an observer in a frame of reference moving at speed v relative to the fixed observer. Calculate the time the fixed observer will measure if to = 5.0 s and the speed of the moving frame of reference (spaceship) is:
   1. 0.65c b. 0.866c c. 0.995c d.0.999c
2. Calculate the apparent length of a 100 m futuristic spaceship when it is travelling at the speed given below
3. 0.63c b. 0.866c c. 0.999c
4. An event takes t0 seconds to occur, according to the occupants ofa space bus that is moving at one-half the speed of light (1/2 c). To a fixed observer outside the space bus, how long will the event take to occur?
5. If the mass of a golf ball (46g) could be converted entirely into energy (E = mc2), how much energy would be released?