Your Name_____**Section**_____

HOMEWORK #8 - 8.01 MIT - Prof. Kowalski

Due **4:00PM Thursday** Oct. 30, 2003

Topics: Momentum and Collisions

Any following problems designated with a bold number indicate problems from Young and Freedman 11th edition.

1. **8.55**
2. **8.73**
3. **8.70**
4. **8.99** Do not solve this problem completely. Rather state what laws apply with words and why; then write down the corresponding equations and outline a plan of solution. A sample plan of attack might be: "Solve the two linear Eqs. 1 and 3 for v3 and v1 in terms of v0 and E0; then plug these into Eq. 2 to find X in terms of the energy released (which was not given in the problem)"
5. **8.106** do parts a and b, and then these parts:
   c. Work put into the propeller goes several places: into work done on the plane, kinetic energy of the air left behind the path of the plane, and turbulence in the air (small eddies, etc.). Under the assumption that the work put into turbulence is negligible, find the maximum possible efficiency (ratio of work done on plane to work done on propeller by the engine) of the propeller in this case.
   d. If the diameter of the propeller were halved, what would the maximum possible efficiency be now?