PHY180F ASSIGNMENT 7 2005

Due When: Thursday November 17 by 4:00 P.M.
Due Where: In your tutor's drop box in the basement of the Physics building (tower) opposite the elevators.

1) A rocket is to be used in outer space where gravity can be ignored. For this problem you can assume that all the fuel is consumed when the rocket accelerates. When type **A** fuel is used, half the rocket's initial mass must be fuel in order for the rocket to accelerate from rest to a speed **X** m·s^{-1} (i.e. the ratio of the mass of the fuel to that of the empty rocket is 1). When type **B** fuel is used, the speed of the ejected gas is three times the speed of ejected gas for type **A** fuel. If type **B** fuel is used to accelerate the rocket from rest to a speed of **X** m·s^{-1}, what is the ratio of the mass of type **B** fuel to that of the empty rocket? This question is taken from last year's final examination.

2) Serway, Chapter 9; Number 24

3) Serway, Chapter 9; Number 60

4) Serway, Chapter 9; Number 66