

## Homework #6

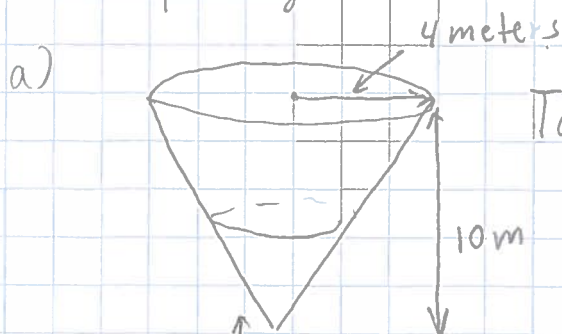
1. A force 200 newtons stretches spring 50 cm. from equilibrium. How much work is done in stretching the spring from 20 cm. to 70 cm from equilibrium?

2. Neglecting air resistance and the weight of the propellant, determine the work done in propelling a five-ton satellite to a height of

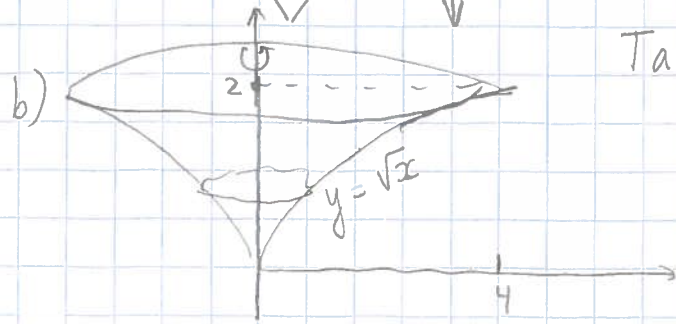
- 300 miles above Earth;
- 10000 miles above Earth.

(radius of the Earth is 4000 miles).

3. For each tank below determine the work done in emptying the tank by pumping the water over the top edge. (The water weights 9800 newtons/m<sup>3</sup>)



Tank = circular cone with top radius = 4 meters, height = 10 meters.



Tank = solid of revolution about y-axis  
 $y = \sqrt{x}$ ,  $0 \leq x \leq 4$ .