Tension Questions

1. What is the tension in the cable of a 1.0 x 103kg elevator that is

a) accelerating downward at a rate of 1.0 m/s2?

(8.8 x 103 N)

b) accelerating upward at a rate of 1.0m/s2?

(1.1 x 104N)

c) moving upward at a constant velocity of 1.0m/s?

2. A 15.0 kg object is pulled vertically upward by a rope. If the tension in the rope is constant at 285 N, what is the acceleration of the object? (Assume the object was initially at rest.) Round our answer to two significant figures.

3. An elevator accelerates upward at a speed of 1.86 m/s2. If the empty elevator has a mass of 830kg,

a) then what is the tension is the cable?

4. A 8.0 kg object is pulled vertically upward by a rope. If the tension in the rope is constant at 95 N, what is the velocity of the object after 1.1 s? (Assume the object was initially at rest.)

5. A rope has a tensile strength of 200N. If I had a bucket of water that I wanted to lift up 6m, what is the maximum at which I can accelerate the lift at? If I lifted it at 0.5 m/s2 would I be ok?