50. The motion of the man-and-chair is positive if upward.

    (a) When the man is grasping the rope, pulling with a force equal to the tension T in the rope, the total upward force on the man-and-chair due its two contact points with the rope is $2T$. Thus, Newton's second law leads to
    $$2T - mg = ma$$
    so that when $a = 0$, the tension is $T = 466$ N.

    (b) When $a = +1.3$ m/s^2 the equation in part (a) predicts that the tension will be $T = 527$ N.

    (c) When the man is not holding the rope (instead, the co-worker attached to the ground is pulling on the rope with a force equal to the tension T in it), there is only one contact point between the rope and the man-and-chair, and Newton's second law now leads to
    $$T - mg = ma$$
    so that when $a = 0$, the tension is $T = 931$ N.

    (d) When $a = +1.3$ m/s^2 the equation in part (c) predicts that the tension will be $T = 1.05 \times 10^3$ N.

    (e) The rope comes into contact (pulling down in each case) at the left edge and the right edge of the pulley, producing a total downward force of magnitude $2T$ on the ceiling. Thus, in part (a) this gives $2T = 931$ N.

    (f) In part (b) the downward force on the ceiling has magnitude $2T = 1.05 \times 10^3$ N.

    (g) In part (c) the downward force on the ceiling has magnitude $2T = 1.86 \times 10^3$ N.

    (h) In part (d) the downward force on the ceiling has magnitude $2T = 2.11 \times 10^3$ N.