33. The free-body diagram is shown below. $\vec{T}$ is the tension of the cable and $m\vec{g}$ is the force of gravity. If the upward direction is positive, then Newton's second law is $T - mg = ma$, where a is the acceleration.

Thus, the tension is $T = m(g + a)$. We use constant acceleration kinematics (Table 2-1) to find the acceleration (where $v = 0$ is the final velocity, $v_0 = -12\,\text{m/s}$ is the initial velocity, and $y = -42\,\text{m}$ is the coordinate at the stopping point). Consequently, $v^2 = v_0^2 + 2ay$ leads to $a = -v_0^2/2y = -(-12)^2/2(-42) = 1.71\,\text{m/s}^2$. We now return to calculate the tension:

$$\begin{aligned} T &= m(g + a) \\ &= (1600\,\text{kg})(9.8\,\text{m/s}^2 + 1.71\,\text{m/s}^2) \\ &= 1.8 \times 10^4\ \text{N} . \end{aligned}$$