

I-135

A man of mass m , concerned about his weight, decides to weigh himself in an elevator. He stands on a bathroom scale in an elevator which is moving upward at v . As the elevator reaches his floor, it slows to a stop over a time interval, T . Determine the reading on the bathroom scale (F_{scale}) as a function of m , v , T , and g .

Free-Body Diagram



Mathematical Analysis

Event 1:

Event 2:

Questions

If $T = \infty$, what should F_{scale} equal? Does your function agree with this observation?

For what combination of v and T would the bathroom scale read 0 N?

If the elevator were initially going down, would the above combination of v and T also lead to a scale reading of 0 N?

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