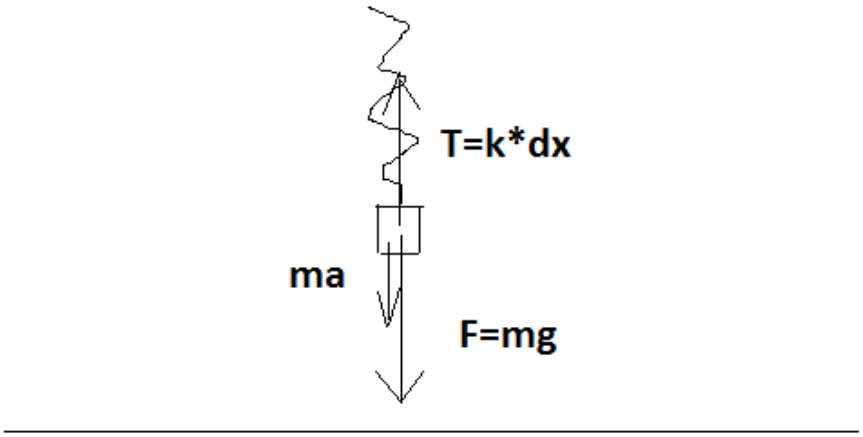
conservation of energy
a mass m is being lifted upward by means of a vertical spring of force constant k,with a uniform upward acceleration 'a'.If at the instant its velocity is v= A g.–(3m/k)
the upper end of the spring is suddenly brought to rest,calculate the max.extension in the spring.



dx=x2-x1 where x1- length of spring in the rest and x2-length at this moment.

Kdx=ma+mg - when mass m is lifting up and kdx+ma=mg when mass m is going down.

The tension T=kdx would be max when ds would be the greatest.this means that x2 should be as far from x1 as it is possible.S0 we will look at the lowest point of string.At that point(and at the moment when tension would be the greatest) a=0

Then T=kdx=mg

So answ: T(max)= mg