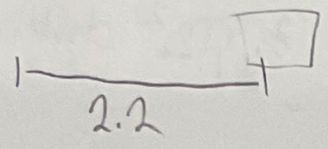
9)

$\Delta X = .011m$

$g\Delta x = 1.93m$




$F_e = -k\Delta X = ma$

$k = -\frac{ma}{\Delta X}$

$V_F = \sqrt{2a\Delta x}$

$V_F = \sqrt{2(10)(1.93)}$

$V = 6.213 m/s$

I F

$\frac{1}{2}kx^2 + mgh = \frac{1}{2}mv^2$

$\frac{1}{2}\left(-\frac{ma}{\Delta x}\right) + mgh = \frac{1}{2}mv^2$

$v = \sqrt{2\left(-\frac{1}{2}\frac{a}{\Delta x}\right) + gh}$

$6.212 = \sqrt{2\left(-\frac{1}{2}\left(\frac{10}{.011}\right)\right) + 10h}$

$h = 91.5m$

$\frac{1}{2}\left(\frac{10}{\Delta x}\right) + 10(91.5) = \frac{1}{2}(6.213)^2$

$\frac{-9.8}{1} = \frac{-k}{m}$

$V_i = \Delta X$

$\frac{2.2m}{\Delta X} = \frac{1.93}{.011}$

$0.0125m$

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