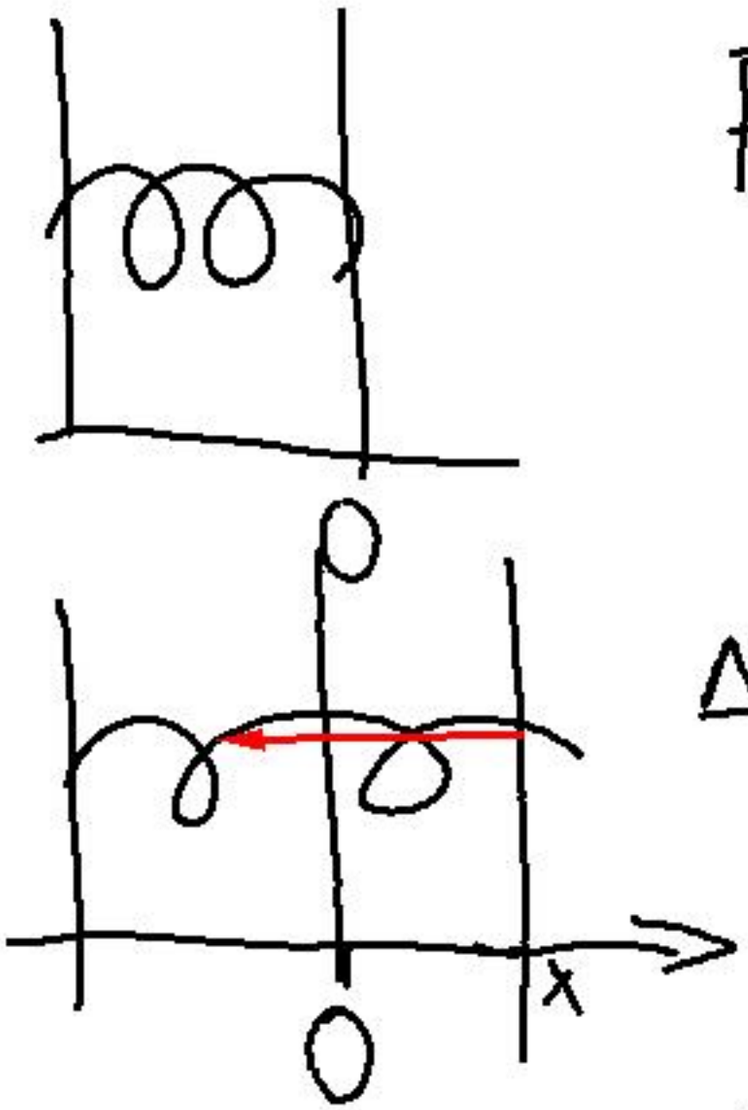
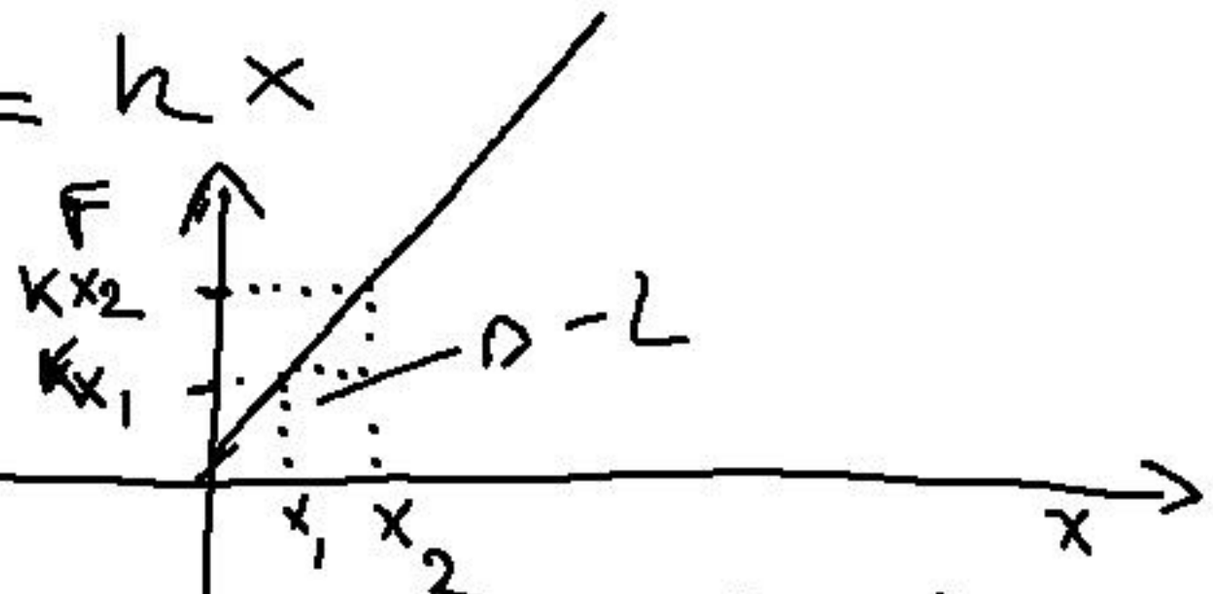
$$\Delta U = -L$$



$$F = kx$$



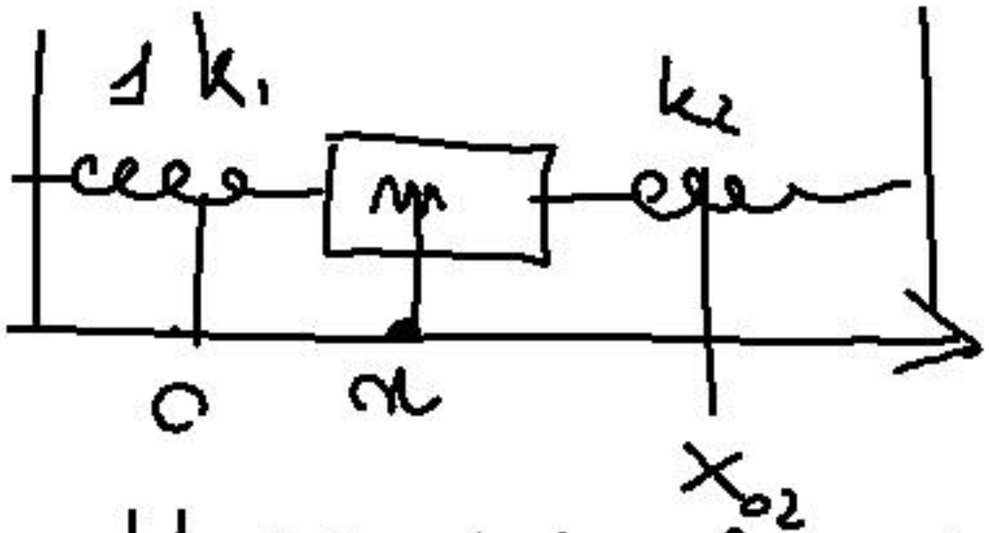
$$\Delta U = -L = \int_{x_1}^{x_2} k(x_2 - x_1) \cdot \left(\frac{x_2 - x_1}{2}\right) =$$

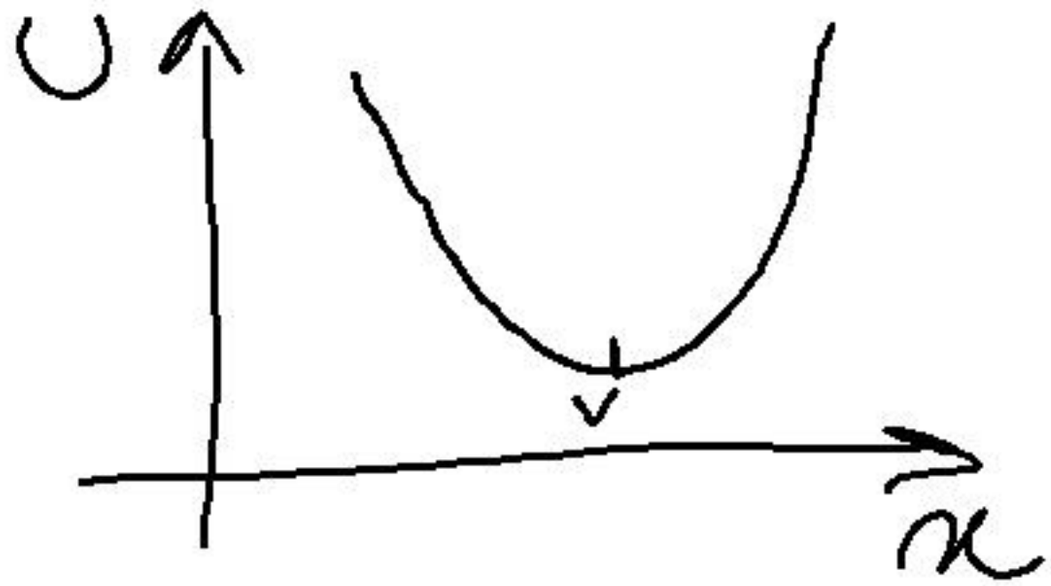
$$= k\left(\frac{x_2^2 - x_1^2}{2}\right)$$

$$\Delta U = \frac{k}{2}x_2^2 - \frac{k}{2}x_1^2$$

$$U(x) = \frac{1}{2}kx^2 + \text{cost}$$

$$U(x) = \frac{1}{2} k x^2$$





$$U(x) = \frac{1}{2} k_1 \cdot x^2 + \frac{1}{2} k_2 \cdot (x_{02} - x)^2$$

$$= \frac{1}{2} k_1 \cdot x^2 + \frac{1}{2} k_2 x_{02} + \frac{1}{2} x^2 k_2 - k_2 x_{02} x$$

$$V(\quad \frac{1}{2} x k_2$$

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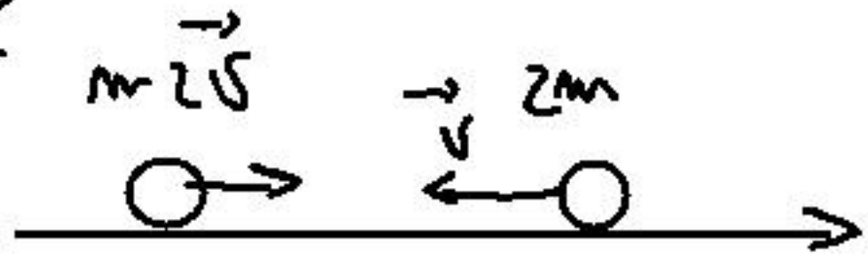

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$$\begin{cases} m\vec{V} + 2m\vec{V} = m\vec{V}_1 + 2m\vec{V}_2 \\ m \cdot 4V^2 + 2m \cdot V^2 = m \cdot V_1^2 + 2m \cdot V_2^2 \end{cases} \qquad V_2 = V$$

$$m \cdot V_1 + 2m \cdot V_2 = 0$$

$$-V_1 = 2V_2$$