$$F(x) \quad = \quad A + Bx$$

$$F(x) \quad = \quad A + Bx + Cx^2$$

$$F(x) \quad = \quad 0.2\,\mathrm{N} \ - \ 0.4\left(\frac{\mathrm{N}}{\mathrm{m}}\right)x \ + \ 0.1\left(\frac{\mathrm{N}}{\mathrm{m}^2}\right)x^2$$

$$\mu(x) = 0.2 * \frac{x}{3\mathrm{m}}$$

$$\mathrm{KE} = \frac{1}{2}mv^2$$

$$\text{Work } = \int \vec{F} \cdot \vec{dx}$$

$$\text{Work } = \int |F||dx|$$

$$\text{Work}_{\text{net}} \quad = \quad \int \vec{F}_{\text{net}} \cdot \vec{dx} \quad = \quad \mathrm{KE}_{\mathrm{f}} \ - \ \mathrm{KE}_{\mathrm{i}}$$

$$\begin{aligned} \mathrm{KE}_{\mathrm{f}} \quad &= \quad \mathrm{KE}_{\mathrm{i}} \quad + \quad \text{Work}_{\text{net}} \\ &= \quad \mathrm{KE}_{\mathrm{i}} \quad + \quad \int \vec{F}_{\text{net}} \cdot \vec{dx} \end{aligned}$$