$$W_{A \to B} = \int_A^B m\bar{g} \, d\bar{s} =$$

$$= m\bar{g} \int_A^B d\bar{s} = m\bar{g} \cdot \bar{r}_{\Delta B} = m\bar{g}(\bar{r}_B - \bar{r}_A) = \quad *$$

$$\bar{r} = x\bar{v}_x + y\bar{v}_y + z\bar{v}_z \qquad \bar{g} = -g\bar{v}_z \quad (g>0)$$

$$* = -mg(z_B - z_A)$$

Energia potenziale : $\boxed{E_p}$

$$\boxed{E_{p,peso} = mgz}$$

$$\Rightarrow W_{A \to B} = -(E_{p,peso,B} - E_{p,peso,A}) = -\Delta E_{p,peso}$$

$$W_{TOT, i \to f} = W_{peso, i \to f} = -\Delta E_{P, peso} = -\left( mg\, z_f - mg\, z_i \right) =$$

$$\overset{!}{=} -mgh$$
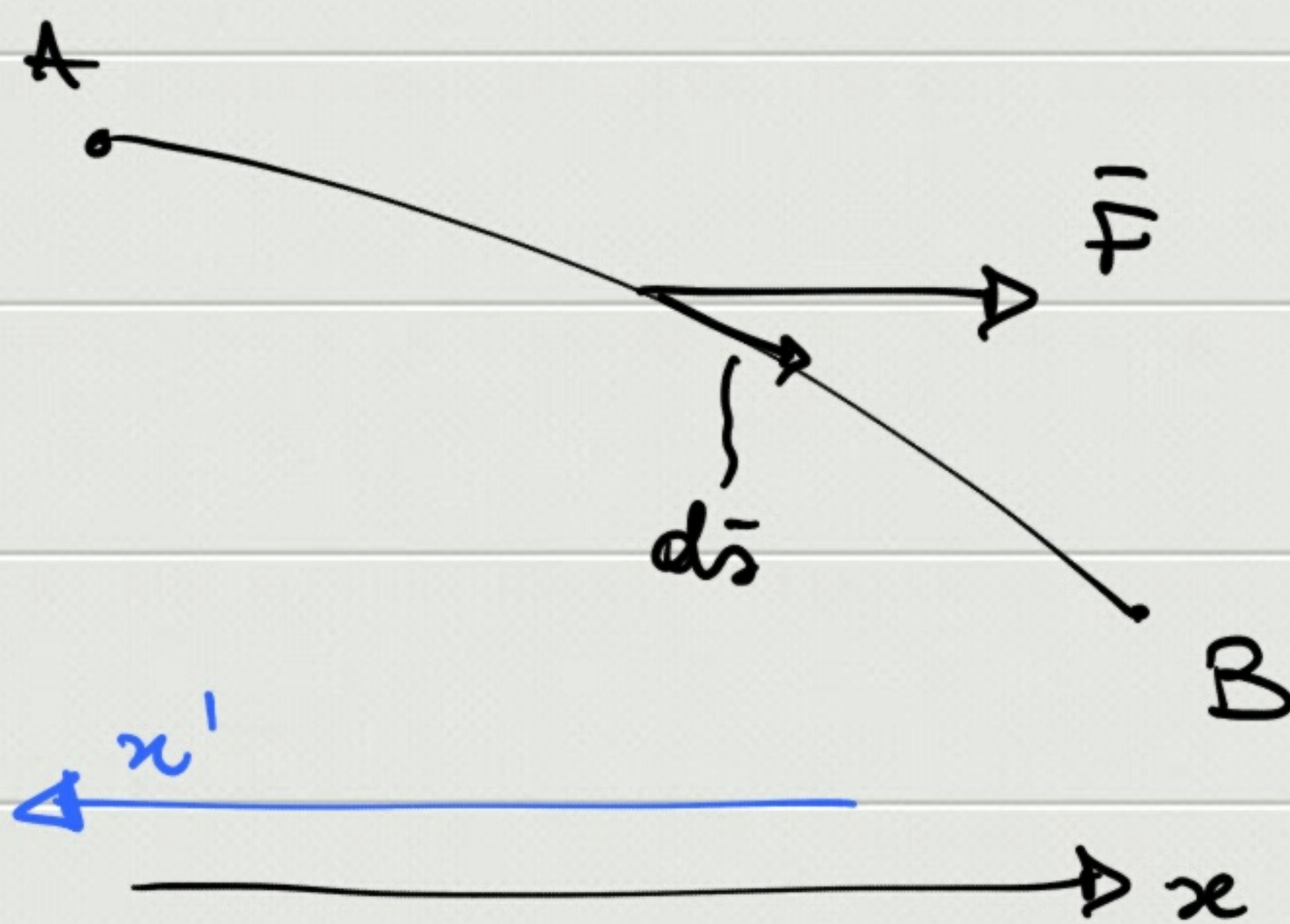
$$W_{TOT, i \to f} = \Delta E_k = \frac{1}{2} m \cancel{v_f}^2 - \frac{1}{2} m v_i^2 = -\frac{1}{2} m v_0^2$$

(with $\cancel{v_f} = 0$)

$$\Rightarrow \boxed{h = \frac{v_0^2}{2g}}$$

$$\bar{F} = \text{cost} = F\,\bar{u}_x$$



$$W_{A \to B} = \int_A^B \bar{F}\, d\bar{s} = \int_A^B \bar{F} \cdot (dx\,\bar{u}_x + dy\,\bar{u}_y + dz\,\bar{u}_z) =$$

$$= \int_{x_A}^{x_B} F\, dx = F(x_B - x_A) = *$$

$$\boxed{E_{P,F} = -Fx} \qquad \boxed{E'_{P,F} = Fx'}$$

$$* = -Fx_A + Fx_B = -\left(E_{P,F,B} - E_{P,F,A}\right) = -\Delta E_{P,F}$$

$$W_{A \to B} = -\Delta E'_{P,F} = -\left(Fx'_B - Fx'_A\right)$$