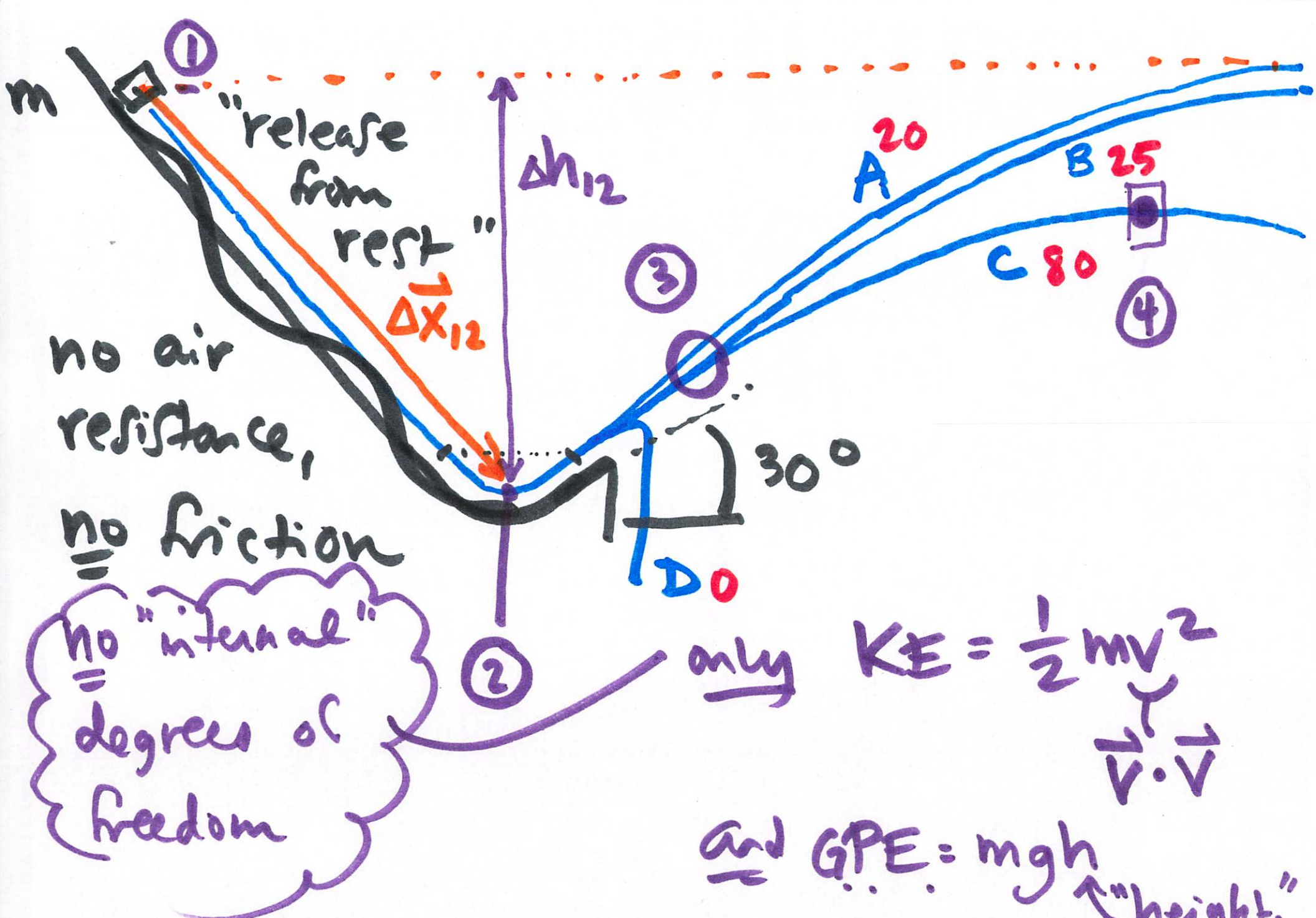
2013-10-08

Enegy - $\frac{1}{2}mv^2$, mgh

Linear momentum - $\vec{p} = m\vec{v}$



no air resistance,

no friction

no "internal" degrees of freedom

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

$\vec{v} \cdot \vec{v}$

and $GPE = mgh$ ← "height."

$$\Delta PE_{12} = -mg\,\Delta h_{12} = -m\vec{g}\cdot\vec{\Delta x}_{12}$$

"from ① to ②

$(PE@② - PE@①)$

~~$\Delta KE_{12} = \frac{1}{2}mv_{②}^2$~~

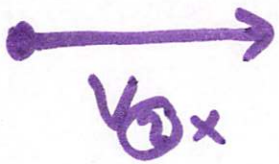
$$\Delta KE_{12} = \frac{1}{2}mv_{②}^2 - 0$$

$(KE@② - KE@①)$

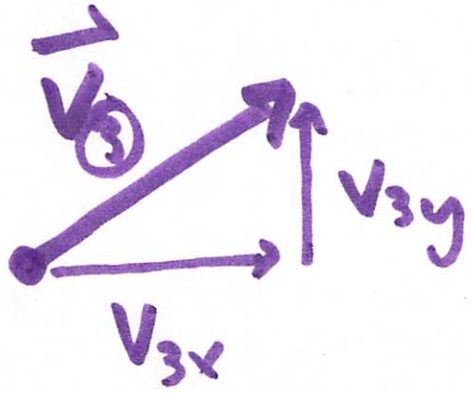
$$\vec{v}_{②}\cdot\vec{v}_{②} =$$

dot product
scalar product.
↳ textbook time

$$\vec{v}_{②} = v_{2x}\hat{i} + v_{2y}\hat{j}$$



@ ③



$$V_③^2 = V_{3x}^2 + V_{3y}^2$$

$$V_③^2 = \vec{V}_3 \cdot \vec{V}_3 = V_{3x} \cdot V_{3x} + V_{3y} \cdot V_{3y}$$