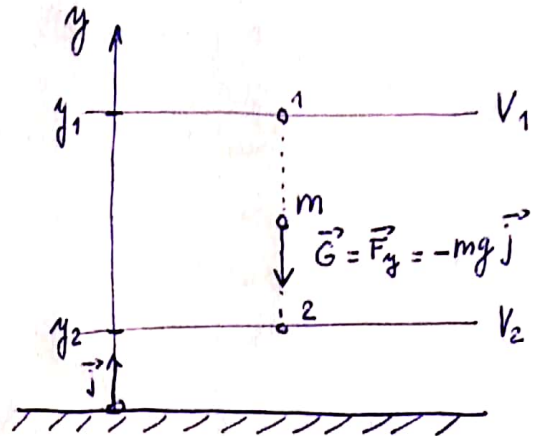


# POTENTIAL ENERGY OF GRAVITY FIELD

Gravity field

$$\vec{F}(\varnothing; -mg; \varnothing)$$

$$d\vec{r}(dx, dy, dz)$$



$$W = \int_{\vec{r}_1}^{\vec{r}_2} \vec{F} d\vec{r} =$$

$$= \int_{\vec{r}_1}^{\vec{r}_2} (\varnothing; -mg; \varnothing)(dx, dy, dz) = \int_{y_1}^{y_2} -mg dy = -mg \int_{y_1}^{y_2} dy =$$

$$= -mg(y_2 - y_1) = \underbrace{-mg y_2}_{U_2} - \underbrace{(-mg y_1)}_{-U_1} = U_2 - U_1 = (-V_2) - (-V_1)$$

$V_2 = -U_2$   
 $V_1 = -U_1$

$$V_2 = mg y_2$$

$$V_1 = mg y_1$$

} general formulation of potential energy

$$V(y) = mg y$$