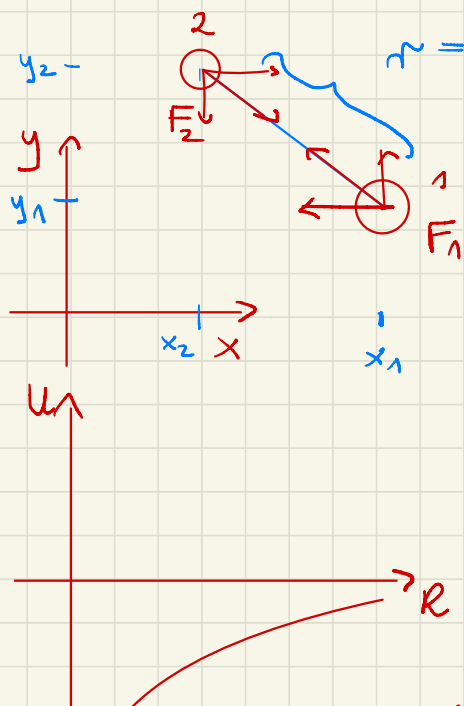# Problem 3 ciał

$$r = \sqrt{(x_2 - x_1)^2 + (y_1 - y_1)^2}$$

$$F_{1x}, \; F_{1y}, \; F_{2x}, \; F_{2y}$$

$$F = \frac{G m_1 m_2}{R^2}$$

$$U = -\frac{G m_1 m_2}{R}$$

$$f\left(x_1, y_1, x_2, y_2\right) \longrightarrow$$

$$\longrightarrow F_{1x}, \; F_{1y}, \; F_{2x}, \; F_{2y}$$

$$U = -\frac{G m_1 m_2}{R}, \qquad r = \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}$$

$$U = -\frac{G m_1 m_2}{\sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}}$$

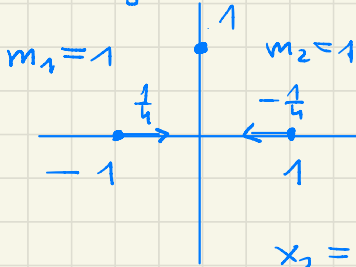$$\vec{F} = \frac{Gm_1m_2}{r^2} \cdot \frac{\vec{r}}{|\vec{r}|}$$

$$\vec{r} = (x_j - x_i)\hat{\imath} + (y_j - y_i)\hat{\jmath}$$

$$F_x = \frac{Gm_1m_2}{r^3} \cdot (x_j - x_i)$$

$$F_y = \frac{Gm_1m_2}{r^3}(y_j - y_i)$$

$x_1 = -1 \quad y_1 = 0 \qquad\qquad G = 1$

$m_1 = 1 \qquad m_2 = 1$

$\frac{1}{4} \qquad -\frac{1}{4}$

$-1 \qquad 1$

$x_2 = 1, \, y_2 = 0$

$$F = \frac{1 \cdot 1 \cdot 1}{2^2} = \frac{1}{4}$$