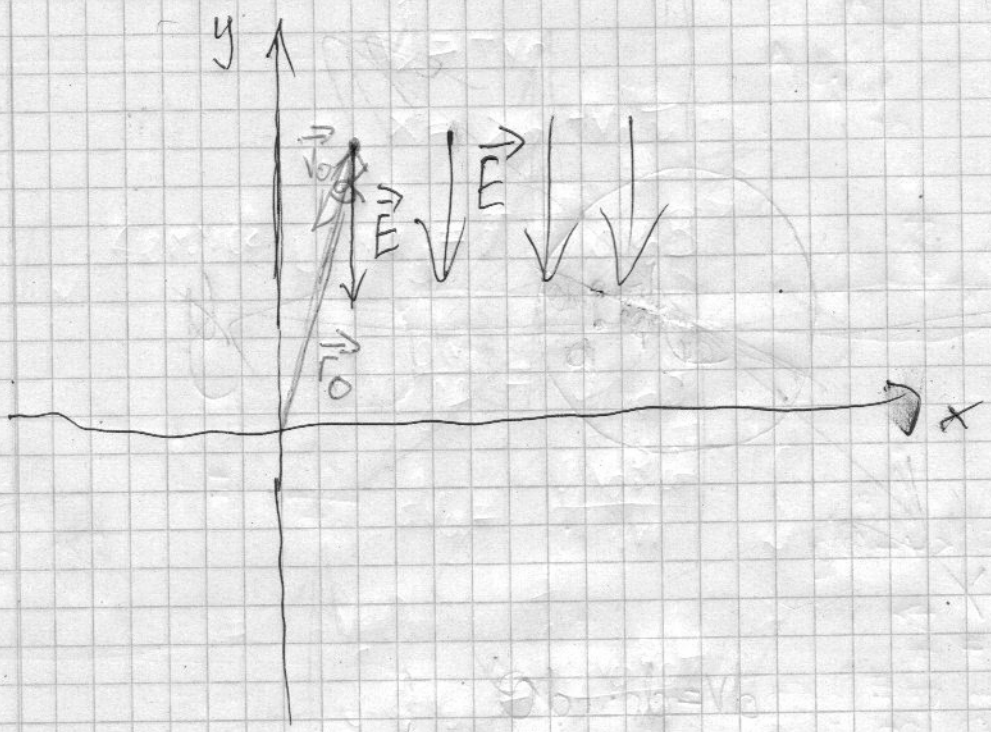
zad. 2. $\vec{F} = q\vec{E}$



$\vec{F} = (0, -qE)$

$\vec{v_0} = (v_0 \sin\alpha, -v_0 \cos\alpha)$

$\vec{r_0} = (x_0, y_0)$

Kierunek x:

$a_x = 0$

$v_x = v_{0x} = -v_0 \sin\alpha$

$r_x = x_0 - v_0 t \sin\alpha$

Kierunek y:

$m\, a_y = -qE$

$m \frac{dv_y}{dt} = -qE$

$m\, dv_y = -qE\, dt \quad / \int$

$\int_{v_{0y}}^{v_y(t)} m\, dv_y = \int_0^t -qE\, dt$

$$m\left(v_y(t) - v_{0y}\right) = -qEt$$

$$v_y(t) = -\frac{qEt}{m} + v_{0y} = -\frac{qEt}{m} - v_0\cos\alpha$$

$$\frac{dy}{dt} = -\frac{qE}{m}t - v_0\cos\alpha$$

$$dy = -\left(\frac{qE}{m}t + v_0\cos\alpha\right)dt \quad /S$$

$$\int_{y_0}^{y(t)} dy = -\int_0^t \left(\frac{qE}{m}t + v_0\cos\alpha\right)dt$$

$$y(t) - y_0 = -\left(\frac{1}{2}\frac{qE}{m}t^2 + v_0 t\cos\alpha\right)$$

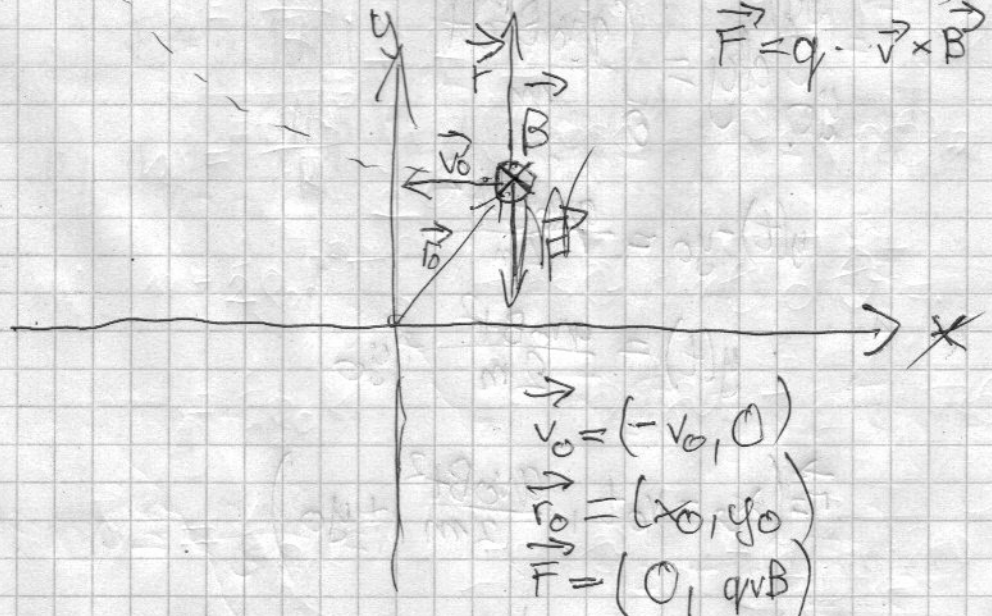
$$y(t) = y_0 - \frac{qEt^2}{2m} - v_0 t\cos\alpha$$

$$\vec{v}(t) = \left(-v_0\sin\alpha, -\frac{qE}{m}t - v_0\cos\alpha\right)$$

$$\vec{r}(t) = \left(x_0 - v_0 t\sin\alpha,\ y_0 - \frac{qEt^2}{2m} - v_0 t\cos\alpha\right)$$

zad. 3.

$$\vec{F} = q\cdot\vec{v}\times\vec{B}$$



$$\vec{v_0} = (-v_0, 0)$$
$$\vec{r_0} = (x_0, y_0)$$
$$\vec{F} = (0, qvB)$$