Opgave 2

$m_p := 100\ kg$

$k_G := 0.25\ m$

$r_G := 0.75\ m$

$\omega_p := 4\ \frac{rad}{s}$

$a_g := 9.81\ \frac{m}{s^2}$

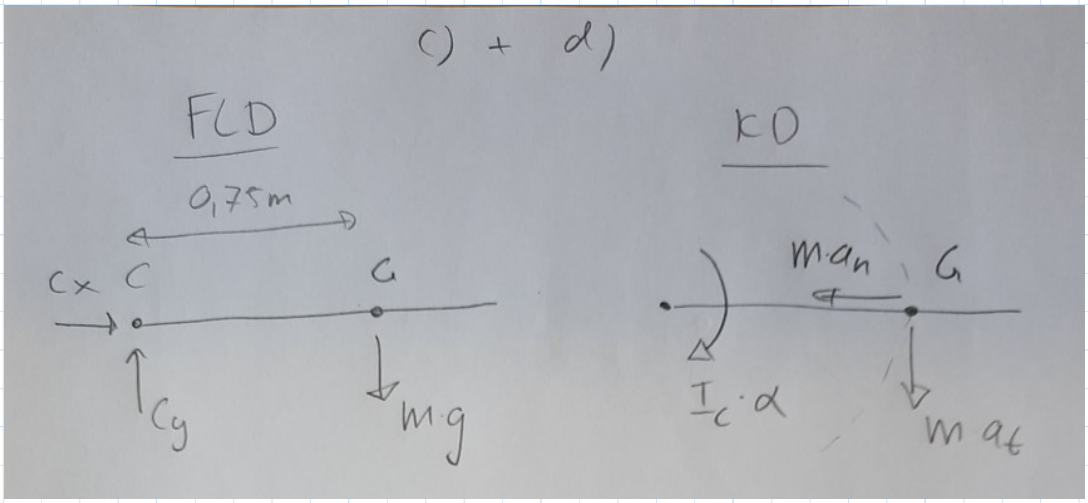
a) Masseinertimoment om G

$I_G := k_G^{\ 2} \cdot m_p = 6.25\ kg \cdot m^2$ $I_G = 6.25\ kg \cdot m^2$

b) Masseinertimoment om C

$I_C := I_G + m_p \cdot r_G^{\ 2} = 62.5\ kg \cdot m^2$ $I_C = 62.5\ kg \cdot m^2$

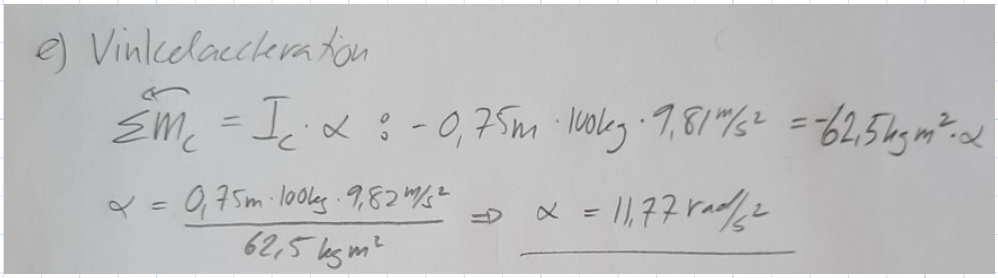
c) + d)



e) Vinkelaccleration

$$\alpha_p := \frac{r_G \cdot m_p \cdot a_g}{I_C} = 11.772 \ \frac{1}{s^2}$$

$$\alpha_p = 11.77 \ \frac{rad}{s^2}$$



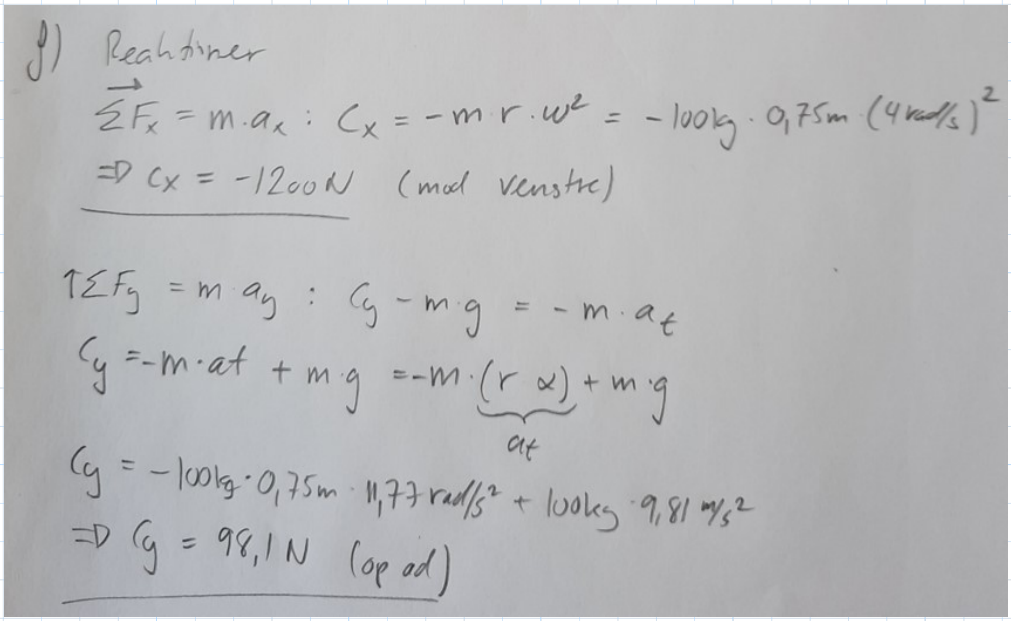
f) Reaktioner på pendulet

$$C_x := -m_p \cdot r_G \cdot \omega_p{}^2 = -1.2 \cdot 10^3 \ N$$

$$C_x = -1200 \ N$$

$$C_y := -m_p \cdot (r_G \cdot \alpha_p) + m_p \cdot a_g = 98.1 \ N$$

$$C_y = 98.1 \ N$$



(Statisk reaktion blot til sammenligning

$$C_{ystatisk} := m_p \cdot a_g = 981 \ N$$

g) Rammens reaktioner

$A_x := -1200\ \boldsymbol{N} = -1.2 \cdot 10^3\ \boldsymbol{N}$ $\quad A_x = -1200\ \boldsymbol{N}$

$B_y := \dfrac{1200\ \boldsymbol{N} \cdot 1\ \boldsymbol{m} + 98.1\ \boldsymbol{N} \cdot 0.6\ \boldsymbol{m}}{1.2\ \boldsymbol{m}} = \left(1.049 \cdot 10^3\right)\ \boldsymbol{N}$ $\quad B_y = 1049.1\ \boldsymbol{N}$

$A_y := C_y - B_y$ $\quad A_y = -950.95\ \boldsymbol{N}$