$$F_A = V_{kubus} \cdot \rho \cdot g = z_3 \cdot \rho \cdot g \ (N)$$

$$F_{rem} = k \cdot v \ (N)$$

$$z = 0,3 \, m$$

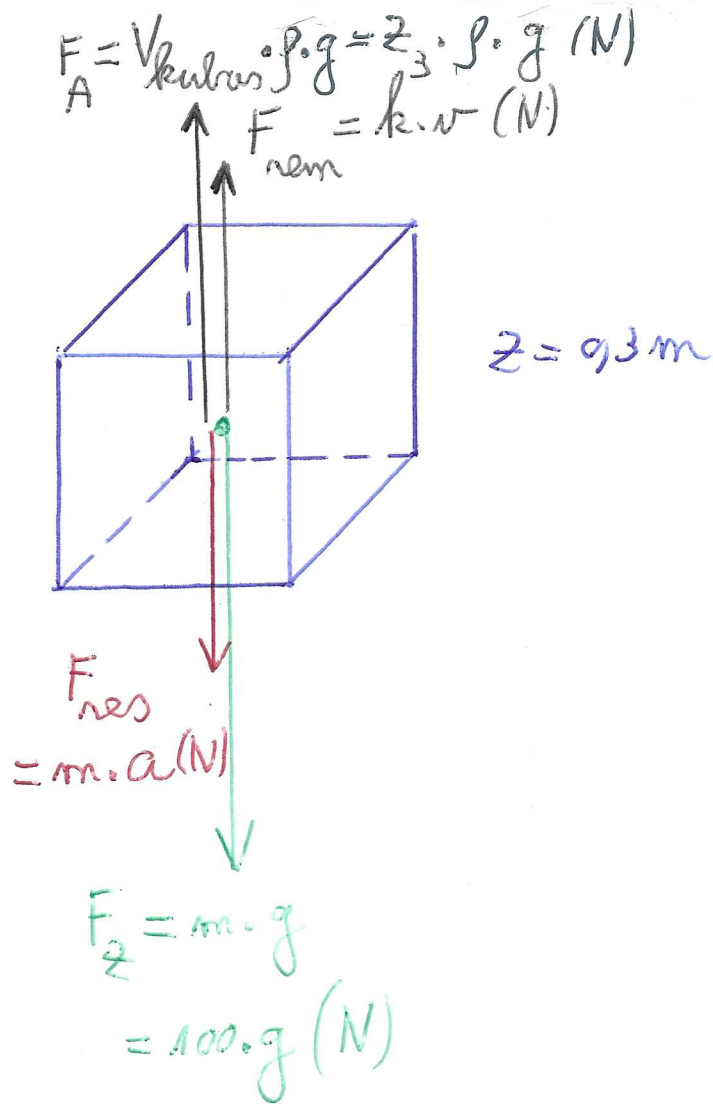$$F_{res} = m \cdot a \ (N)$$

$$F_z = m \cdot g$$

$$= 100 \cdot g \ (N)$$

$$F_{res} = F_z - F_A - F_{rem}$$

$$m \cdot a = m \cdot g - z^3 \cdot \rho \cdot g - k \cdot v$$

$$100 \cdot \frac{dv}{dt} = 100 \cdot 9,81 - 0,3^3 \cdot 1000 \cdot 9,81 - k \cdot v$$

$$100 \cdot \frac{dv}{dt} + k \cdot v = 716,13$$

$$\frac{dv}{dt} + \underbrace{\frac{k}{100}}_{P(t)} \cdot v = \underbrace{7,1613}_{Q(t)}$$

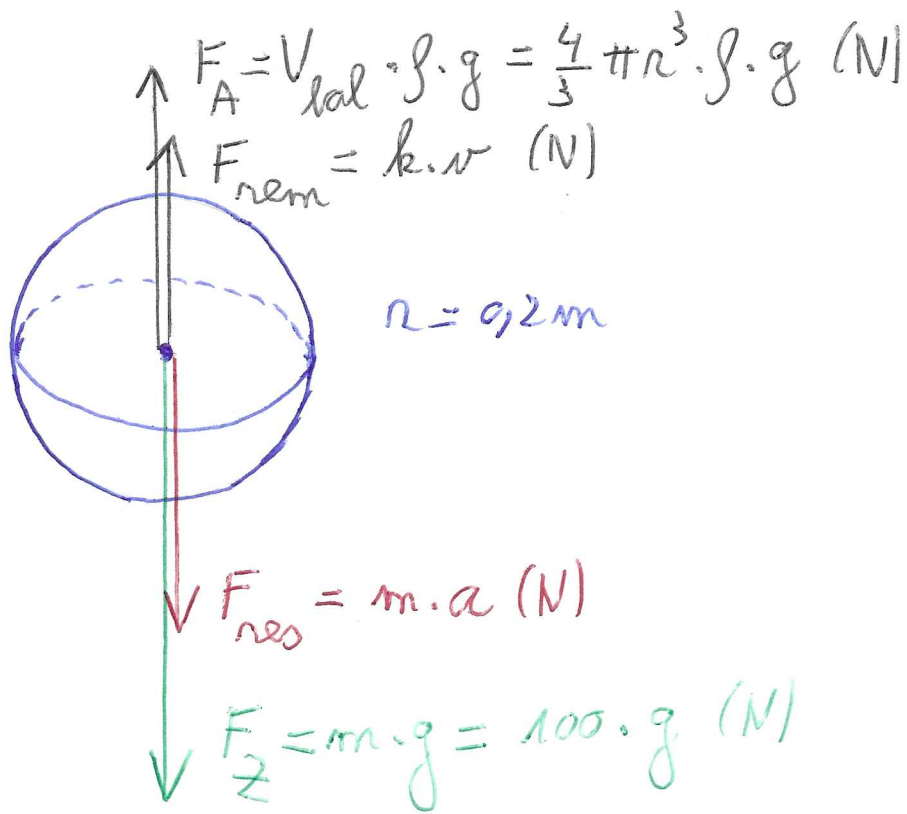$$\mu(t) = e^{\int P(t).dt} = e^{\int \frac{k}{100}.dt}$$

$$= e^{\frac{k}{100}.t}$$

$$v(t) = e^{-\frac{k}{100}.t} . \left[\int e^{\frac{k}{100}.t} . 7,1613 . dt + c \right]$$

$$v(t) = e^{-\frac{k}{100}.t} . \left[\frac{716,13}{k} . e^{\frac{k}{100}.t} + c \right]$$

$$v(t) = \frac{716,13}{k} + c.e^{-\frac{k}{100}.t} = v_{kubus}(t)$$

$$F_A = V_{bal} \cdot \rho \cdot g = \frac{4}{3}\pi r^3 \cdot \rho \cdot g \ (N)$$

$$F_{rem} = k \cdot v \ (N)$$

$$n = 0,2m$$

$$F_{res} = m \cdot a \ (N)$$

$$F_Z = m \cdot g = 100 \cdot g \ (N)$$

$$F_{res} = F_Z - F_A - F_{rem}$$

$$m \cdot a = m \cdot g - \frac{4}{3}\pi r^3 \cdot \rho \cdot g - k \cdot v$$

$$100 \cdot \frac{dv}{dt} = 100 \cdot 9,81 - \frac{4}{3} \cdot \pi \cdot 0,2^3 \cdot 1000 \cdot 9,81 - k \cdot v$$

$$100 \cdot \frac{dv}{dt} + k \cdot v = 652,2637$$

$$\frac{dv}{dt} + \underbrace{\frac{k}{100}}_{P(t)} \cdot v = \underbrace{6,522637}_{Q(t)}$$

$$N_{bol}(t) = \frac{652,2637}{k} + C \cdot e^{-\frac{k}{100} \cdot t}$$

c.) $N_{kubas} > N_{bol}$

$$N_{bol}(t) = \frac{652,2637}{k} + C \cdot e^{-\frac{k}{100} \cdot t}$$