

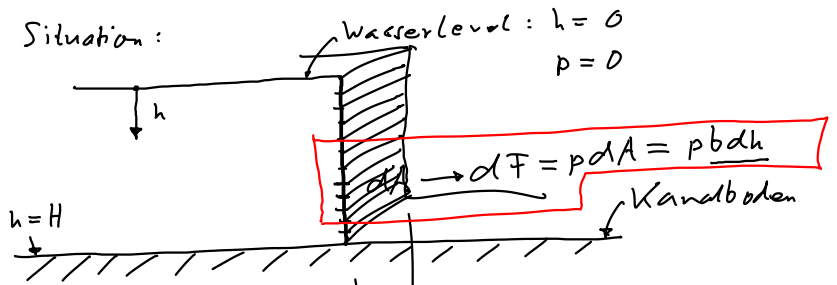
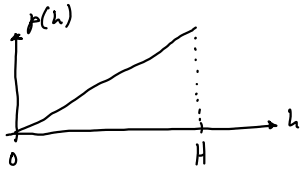
Kraft auf Damm

(i) Konstante Breite b

$$P = \rho g h$$

Tiefe

1000 10

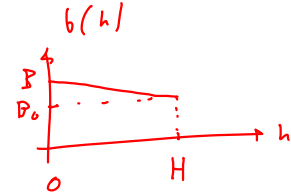
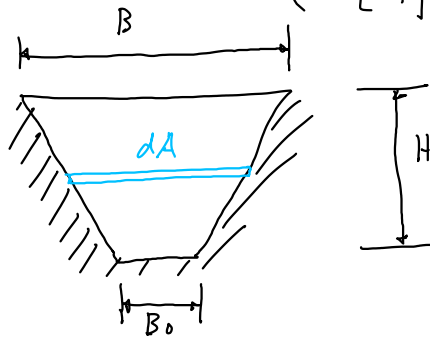


$$\rightarrow F = \int_0^H \underbrace{\rho g h}_{p(h)} \underbrace{b}_{dA} dh = \rho g b \int_0^H h dh$$

$$= \rho g b \left. \frac{h^2}{2} \right|_0^H = \rho g b \frac{H^2}{2}$$

$$[F] = \frac{kg \cdot N \cdot m^2}{m^3 \cdot kg} = N$$

(ii) Damm von vorne:



Aufgabe: Ges: F

Lösung:

$$b(h) = B - \frac{B - B_0}{H} h$$

$$\rightarrow F = \int_0^H \underbrace{\left(B - \frac{B - B_0}{H} h \right)}_{b(h)} \underbrace{\rho g h}_{p(h)} \underbrace{dh}_{dA}$$

$$= \rho g \int_0^H \left(B h - \frac{B - B_0}{H} h^2 \right) dh$$

$$= \rho g \left(\frac{B H^2}{2} - \frac{B - B_0}{3 H} H^3 \right) = \rho g H^2 \left(\frac{B}{2} - \frac{B - B_0}{3} \right)$$