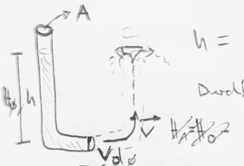

$$h = \frac{v^2}{2g} \Rightarrow v = \sqrt{2gh}$$

Durchfluss $\Rightarrow Q = v \cdot A = \sqrt{2gh} \cdot A$

$$H_1 = \frac{H_0 \cdot A - \Delta t \cdot Q}{A} = \frac{H_0 \cdot A - \Delta t \cdot v \cdot A}{A}$$

$$H_1 = H_0 - \Delta t \cdot v = H_0 - \Delta t \cdot \sqrt{2gh}$$

$$H_1 - H_0 = \boxed{\Delta h = -\Delta t \cdot \sqrt{2g} \cdot \sqrt{h}}$$

$$\frac{1}{\sqrt{h}} \Delta h = -\sqrt{2g}\, \Delta t \Rightarrow \int \frac{1}{\sqrt{h}} dh = -\sqrt{2g} \int dt$$

$$\Rightarrow 2\sqrt{h} = -\sqrt{2g} \cdot t + c$$

$$h = \left[\frac{\left(-\sqrt{2g} \cdot t + c\right)}{2}\right]^2$$

$$h(t) = \frac{2gt^2 - 2\sqrt{2g}\,tc + c^2}{4}$$

$$h(t=0) = H_0 = \frac{c^2}{4} \Rightarrow c = 2\sqrt{H_0}$$

$$h(t) = \frac{2gt^2 - 2\sqrt{2g}\,t\, 2\sqrt{H_0} + 4H_0}{4}$$

$$= \frac{1}{2} gt^2 - \sqrt{2g}\sqrt{H_0}\, t + H_0 \checkmark$$

when empty? $h(t) = \varnothing$

$$0 = \frac{1}{2} gt^2 - \sqrt{2gH_0}\, t + H_0$$

$$\cancel{-H_0 = t\left(\frac{1}{2} g t - \sqrt{2gH_0}\right)}$$

$$\cancel{-\frac{H_0}{t} = \frac{1}{2} gt - \sqrt{2gH_0}}$$

$$a = \frac{1}{2} g \quad b = -\sqrt{2gH_0} \quad c = H_0$$

$$t_{1,2} = \frac{\sqrt{2gH_0} \pm \sqrt{2gH_0 - 2gH_0}}{g}$$

$$= \frac{\sqrt{2gH_0} \pm \varnothing}{g} = \frac{\sqrt{g}\sqrt{2H_0}}{\sqrt{g} \cdot g}$$

$$= \frac{g \cdot \sqrt{2H_0}}{\sqrt{g} \cdot g} = \frac{\sqrt{2H_0}}{\sqrt{g}} \checkmark$$