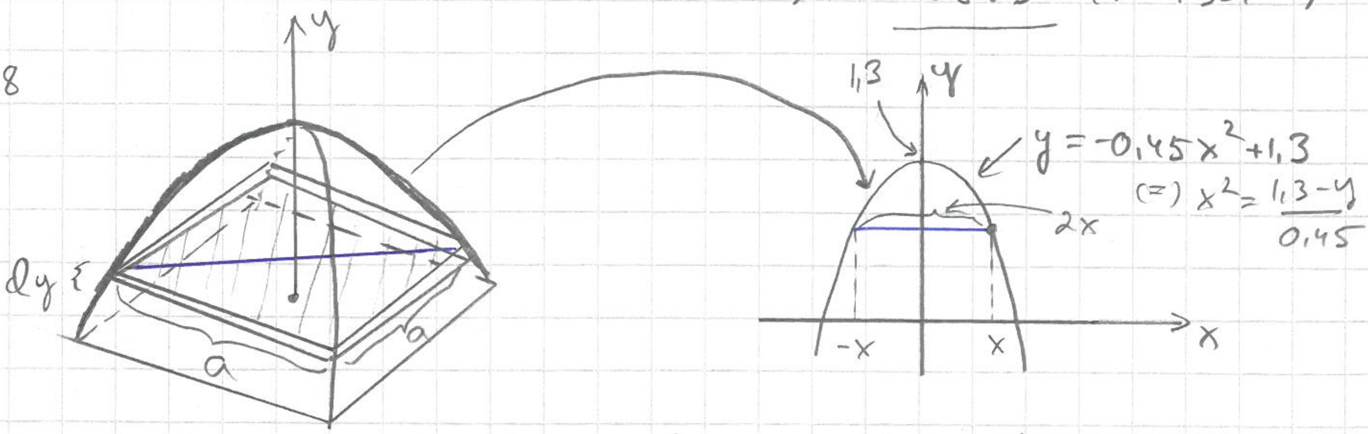
$$V = \int_{-6}^{6} A(x)\,dx = \int_{-6}^{6} \sqrt{3}\,(36 - x^2)\,dx \underset{\text{symmetri}}{=} \sqrt{3}\cdot 2 \left. 36x - \tfrac{1}{3}x^3 \right|_{0}^{6}$$

$$= 2\sqrt{3}\left(\left(36\cdot 6 - \tfrac{1}{3}\cdot 6^3\right) - 0\right) = \underline{288\sqrt{3}} \quad (\doteq 498{,}8)$$

16.8



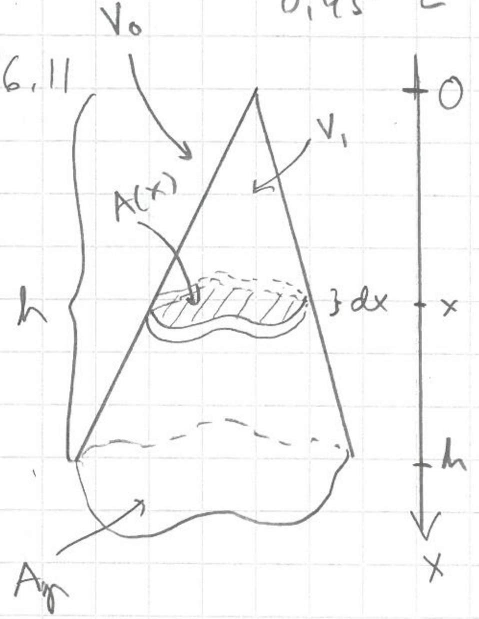
$$\text{Pythagoras: } a^2 + a^2 = (2x)^2 \iff 2a^2 = 4x^2 \quad |:2$$

$$\iff a^2 = 2x^2 = 2\cdot\frac{1{,}3 - y}{0{,}45} = A(y)$$

$$V = \int_0^{1{,}3} A(y)\,dy = \int_0^{1{,}3} 2\cdot\frac{1{,}3 - y}{0{,}45}\,dy = \frac{2}{0{,}45}\left. 1{,}3y - \tfrac{1}{2}y^2 \right|_0^{1{,}3}$$

$$= \frac{2}{0{,}45}\left[\left(1{,}3\cdot 1{,}3 - \tfrac{1}{2}\cdot 1{,}3^2\right) - 0\right] \doteq 3{,}7556 \doteq \underline{3{,}8\ (m^3)}$$

16.11



$$V_1 \sim V_0$$

$$\frac{A(x)}{A_g} = k^2 = \left(\frac{x}{h}\right)^2 \quad |\cdot A_g$$

$$\iff A(x) = A_g\left(\frac{x}{h}\right)^2 = A_g\,\frac{x^2}{h^2}$$

$$V_0 = \int_0^h A(x)\,dx = \int_0^h A_g\,\frac{x^2}{h^2}\,dx$$

$$= \frac{A_g}{h^2}\left. \tfrac{1}{3}x^3 \right|_0^h = \frac{A_g}{h^2}\left(\tfrac{1}{3}h^3 - \tfrac{1}{3}\cdot 0^3\right)$$

$$= \frac{A_g}{h^2}\cdot\frac{1}{3}h^3 = \frac{1}{3}A_g h$$