

$$\begin{array}{l}
 9.12 \quad \sqrt[3]{3000} \approx 14,42 \\
 \sqrt[3]{3001} \approx 14,42 \\
 \sqrt[3]{3002} \approx 14,43 \\
 \vdots \\
 \sqrt[3]{5000} \approx 17,0998
 \end{array}
 \left. \vphantom{\begin{array}{l} \sqrt[3]{3000} \\ \sqrt[3]{3001} \\ \sqrt[3]{3002} \\ \vdots \\ \sqrt[3]{5000} \end{array}} \right\}$$

$$\begin{array}{l}
 15^3 = 3375 \\
 16^3 = 4096 \\
 17^3 = 4913
 \end{array}$$

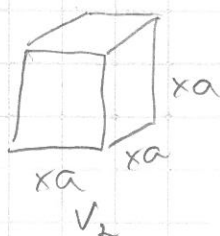
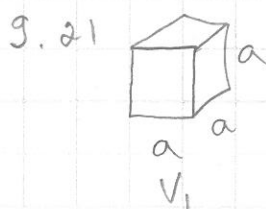
$$\begin{array}{l}
 9.19 \quad \sqrt[3]{100\,000} \approx 46,42 \\
 \sqrt[3]{100\,001} \approx 46,42 \\
 \vdots
 \end{array}$$

$$\sqrt[3]{x} = 47 \quad (\Rightarrow) \quad x = 47^3 = \underline{\underline{103\,823 \text{ (e)}}}$$

$$\begin{array}{l}
 9.20 \quad \text{aluse: } 28\,000 \quad \downarrow \cdot x \\
 1 \text{ v:n kulutus: } x \cdot 28\,000 \quad \downarrow \cdot x \\
 2 - \text{ " } \quad \quad \quad : x^2 \cdot 28\,000
 \end{array}$$

$$\begin{array}{l}
 a) \quad 3 - \text{ " } \quad \quad \quad : x^3 \cdot 28\,000 = 17\,000 \quad | : 28\,000 \quad (\Rightarrow) \quad x^3 = \frac{17}{28} \quad \sqrt[3]{} \\
 (\Rightarrow) \quad x = \sqrt[3]{\frac{17}{28}} \approx 0,8468 \approx \underline{\underline{0,85}}
 \end{array}$$

$$\begin{array}{l}
 b) \quad 5 \text{ v:n kulutus: } x^5 \cdot 28\,000 = \left(\sqrt[3]{\frac{17}{28}} \right)^5 \cdot 28\,000 \approx 12\,189,2 \\
 \approx \underline{\underline{12\,000 \text{ (e)}}}
 \end{array}$$



$$V_1 = a^3$$

$$V_2 = (xa)^3$$

$$V_2 = 2V_1$$

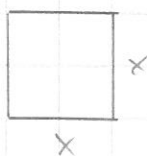
$$(\Rightarrow) (xa)^3 = 2a^3$$

$$(\Rightarrow) x^3 a^3 = 2a^3 \quad | : a^3$$

$$\begin{array}{l}
 (\Rightarrow) x^3 = 2 \quad \sqrt[3]{} \quad (\Rightarrow) x = \sqrt[3]{2} \approx 1,25992 \\
 \approx \underline{\underline{1,26}}
 \end{array}$$

10. Funktio

Esim.



Valiön pinta-ala riippuu sivusta x eli pinta-ala on sivun funktio

sivu (x)	pinta-ala ($f(x) = x^2$)
2	$2^2 = 4$
3	$3^2 = 9$

- funktion lauseke : $f(x) = x^2$

- sivun pituus $x > 0 \quad (\Rightarrow) \quad \text{määrittelyjoukko} : x > 0$

- pinta-ala $f(x) > 0 \quad (\Rightarrow) \quad \text{arvojoukko} : f(x) > 0$