

$$8.2.2 \quad \left. \begin{array}{l} \sqrt{500} \approx 22,36 \\ \sqrt{501} \approx 22,38 \\ \sqrt{502} \approx 22,41 \\ \vdots \\ \sqrt{700} \approx 26,46 \end{array} \right\}$$

$$\left. \begin{array}{l} 23^2 = \underline{529} \\ 25^2 = \underline{625} \end{array} \right\}, \quad \left. \begin{array}{l} 24^2 = \underline{576} \\ 26^2 = \underline{676} \end{array} \right\}$$

luonnolliset luvut: $\mathbb{N} = \{0, 1, 2, 3, \dots\}$

9. Kuutiojuuri

Esim. a) $x^3 = 8 \quad (\Rightarrow) x = 2$
 b) $x^3 = -27 \quad (\Rightarrow) x = -3$

Yleisesti $x^3 = a \quad |^3\sqrt{\quad} \quad (\Rightarrow) x = \sqrt[3]{a}$

1° $\sqrt[3]{a} > 0$, kun $a > 0$

2° $\sqrt[3]{a} < 0$, kun $a < 0$

9.1 a) $\sqrt[3]{125} = 5 \quad (5^3 = 125)$
 b) $\sqrt[3]{0} = 0 \quad (0^3 = 0)$
 c) $\sqrt[3]{-1000} = -10 \quad (-10)^3 = -1000$
 d) $\sqrt[3]{4}$ ei riisene

9.2, 3, 4, 6, 11, 12, 19 $\rightarrow$

9.3 a) $\sqrt[3]{3-30} = \sqrt[3]{-27} = -3 \quad ((-3)^3 = -27)$

b) $(\sqrt[3]{-7})^3 = -7$

9.4 a) $x^3 = 729 \quad |^3\sqrt{\quad} \quad (\Rightarrow) x = \sqrt[3]{729} = \underline{9}$

b) $4x^3 + 108 = 0 \quad (\Rightarrow) 4x^3 = -108 \quad |:4 \quad (\Rightarrow) x^3 = -27 \quad |^3\sqrt{\quad}$
 $(\Rightarrow) x = \sqrt[3]{-27} = \underline{-3}$

9.6 maanantai: 256 $\cdot x$

tiistai: $x \cdot 256 \cdot x$

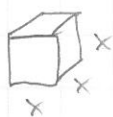
keskiviikko: $x^2 \cdot 256 \cdot x$

torstai: $x^3 \cdot 256 = 814$

$| : 256 \quad (\Rightarrow) x^3 = \frac{814}{256} \quad |^3\sqrt{\quad}$

$(\Rightarrow) x = \sqrt[3]{\frac{814}{256}} \approx 1,47049 \approx \underline{1,47}$

9.11



tilavuus: $V = x^3 = 220 \text{ km}^3 \quad |^3\sqrt{\quad}$

$(\Rightarrow) x = \sqrt[3]{220 \text{ km}^3} \approx 6,0368 \text{ km} \approx \underline{6,04 \text{ km}}$