

21.20 Useita muuttujia \Rightarrow taulu 920

	hensilaito	maissi/hensilaito	numero
alusse	$x+6$	$\frac{1248}{x+6}$ (30)	1248
lojussa	x	$\frac{1248}{x}$ (39)	1248

$$\Rightarrow \frac{1248}{x+6} + 9 = \frac{1248}{x} \quad | \cdot (x+6)x \neq 0, x \neq -6, x \neq 0$$

$$\Leftrightarrow 1248x + 9(x+6)x = 1248(x+6)$$

$$\Leftrightarrow 1248x + 9x^2 + 54x = 1248x + 7488$$

$$\Leftrightarrow 9x^2 + 54x - 7488 = 0 \quad \Leftrightarrow x = \dots = \begin{cases} 26 \% \\ -32 < 0 \end{cases}$$

Vast. hensilaito : 26 , maissi : $\frac{1248}{26} = 48$ (e)

22. juurifunktio

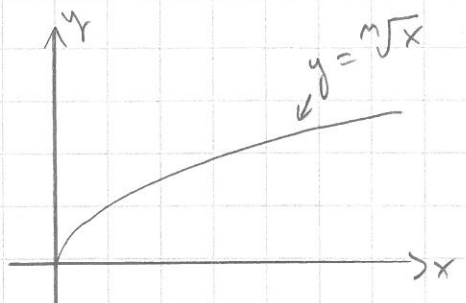
Esim. $x^2 = 4 \quad | \sqrt{\quad} \quad \Leftrightarrow x = \pm\sqrt{4} = \pm 2$
 $\underbrace{x^2}_{\geq 0} = -4 \quad \downarrow \quad$ ei ratk. ($\sqrt{-4}$ ei ole määritelty)

$$x^3 = 8 \quad | \sqrt[3]{\quad} \quad \Leftrightarrow x = \sqrt[3]{8} = 2$$

$$x^3 = -8 \quad | \sqrt[3]{\quad} \quad \Leftrightarrow x = \sqrt[3]{-8} = -2$$

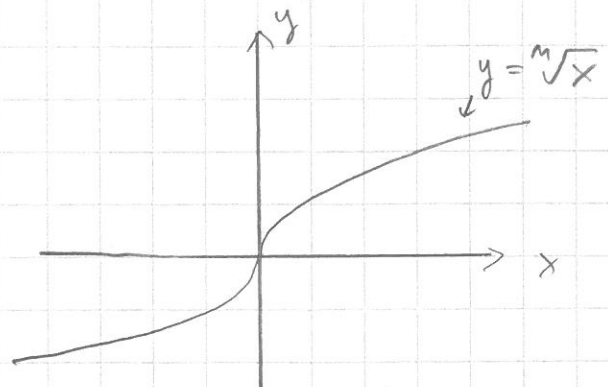
Yleisesti juurifunktio $\sqrt[m]{x}$

1° $m = 2k$ (parillinen)



$$x \geq 0 \quad (x \in [0, \infty[)$$

2° $m = 2k+1$ (pariton)



$$x \in \mathbb{R}$$

22.5 $f: 3 \quad g: 2 \quad h: 4 \quad i: 1$

22.7 $f(x) = x+1 + \sqrt{25-x^2}$
 ≥ 0

$$25-x^2 \geq 0$$

Vastaus yleisesti : $25-x^2=0 \quad \Leftrightarrow 25=x^2 \quad | \sqrt{\quad} \quad \Leftrightarrow x = \pm 5$