

1. Paloittain määritelty funktio

$$1.6 \quad f(x) = \begin{cases} x^2 - 3, & x \leq 0 \\ 3x^2 - x, & x > 0 \end{cases}$$

$$1^\circ x \leq 0: f(x) = x^2 - 3 = 0 \Leftrightarrow x^2 = 3 \quad | \sqrt{} \\ \Leftrightarrow x = \pm \sqrt{3}$$

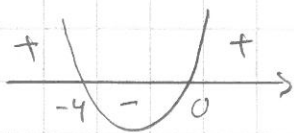
$$2^\circ x > 0: f(x) = 3x^2 - x = 0 \Leftrightarrow x(3x - 1) = 0 \\ \Leftrightarrow x = 0 \text{ tai } 3x - 1 = 0 \Leftrightarrow x = \frac{1}{3}$$

Vast. $x = -\sqrt{3}$ tai $x = \frac{1}{3}$

$$|a| = \begin{cases} a, & a \geq 0 \\ -a, & a < 0 \end{cases}$$

$$1.4 \text{ a) } |x^2 + 4x|$$

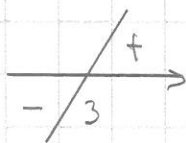
$$0\text{-kohdet: } x^2 + 4x = 0 \Leftrightarrow x(x + 4) = 0 \Leftrightarrow x = 0 \text{ tai } x = -4$$



$$\Rightarrow |x^2 + 4x| = \begin{cases} x^2 + 4x, & x \leq -4 \text{ tai } x \geq 0 \\ -(x^2 + 4x) = -x^2 - 4x, & -4 < x < 0 \end{cases}$$

$$b) \quad x + |2x - 6|$$

$$0\text{-kohdet: } 2x - 6 = 0 \Leftrightarrow x = 3$$



$$x + |2x - 6| = \begin{cases} x + (2x - 6) = 3x - 6, & x \geq 3 \\ x - (2x - 6) = -x + 6, & x < 3 \end{cases}$$

$$1.14 \text{ a) } f: [0, 5] \rightarrow \mathbb{R}$$

määritellyillä

$$x \in [0, 5]$$

$$f(x) = \begin{cases} x + 2, & 0 \leq x < 3 \\ 3, & x = 3 \\ 4, & 3 < x \leq 5 \end{cases}$$

$f(x)$ on arvoiltaan asteen reaalilukujen (miten monta kerta!) $\leftarrow$