Fábián T. Nikolett RDD2XA

(3)

$f(x) := x^2 - 12x + 11 \quad x \in (-\infty, 5]$

$\forall x_1, t \in D_f : x \neq t \Rightarrow f(x) \neq f(t)$

$x_1, t \in D_f = (-\infty, 5]$

$f(x) - f(t) = (x^2 - 12x + 11) - (t^2 - 12t + 11)$

$= (x^2 - t^2) - 12(x - t)$

$= (x - t)(x + t - 12) \neq 0$

$x < 5 \quad t < 5$

$x + t - 12 < 5 + 5 - 12 = -2$

↳ invertálható

$D_{f^{-1}} = R_f$

$R_{f^{-1}} = D_f = (-\infty, 5]$

$R_f = \{ y \in \mathbb{R} \mid \exists x \in D_f : y = f(x) \} = \{ y \in \mathbb{R} \mid \exists x \in (-\infty, 5] : y = x^2 - 12x + 11 \}$

$\{ \mathbb{R} \mid \exists x \in \mathbb{R} : y = x^2 - 12x + 11 \}$

$x^2 - 12x + 11 = y$

$x^2 - 12x + 11 - y = 0$

$\Delta = 144 - 4(11 - y)$

$= 100 + 4y$

$x_{1,2} = \frac{12 \pm 2\sqrt{25 + y}}{2} = 6 \pm \sqrt{25 + y}$

↳ $25 + y \geq 0$

$y \geq -25$

$y \in [-25, +\infty)$

Fabian T. Nikolett RDD2XA

$$x_{1,2} = 6 \pm \sqrt{25+y} \quad \in (-\infty, 5]$$

$$y \geq -25$$

$$x_1 = 6 + \sqrt{25+y} \leq 5$$

$$\sqrt{25+y} \leq -1$$

$$y = \not\in$$

$$x_2 = 6 - \sqrt{25+y} \leq 5$$

$$\sqrt{25+y} \geq 1$$

$$y \geq -24$$

$$D_{f^{-1}} = R_f = [-25, \infty) \wedge f^{-1}(y) = 6 - \sqrt{25-y} \quad (y \geq -24)$$