(- II

Dana je funkcija $f(x) = \log_3 \frac{x-2}{2x}$

a) Reši enačbo $f(x) = 2$

b) Pokaži, da funkcija nima stacionarnih točk

c) Določi Df, izračunaj ničla, ter načrtaj graf

d) Napiši enačbo inverzne funkcije.

Rešitev:

a) $\log_3 \frac{x-2}{2x} = 2$

$\frac{x-2}{2x} = 3^2$ (1t) (2t)

$x - 2 = 18x$

$x = \frac{-2}{17}$ (1t)

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b) $y = \log_3 \frac{x-2}{2x}$ $z = \frac{x-2}{2x}$ $z' = \frac{2x - (x-2)\cdot 2}{4x^2} = \frac{4}{x^2}$

stac. t.

$y' = 0$

$y = \log_3 z$

$y' = \frac{1}{z} \ln 3 \cdot z'$ (1t) (3t)

$y' = \frac{2x}{x-2} \cdot \frac{1}{x^2} \cdot \ln 3 = 0$

$\frac{2 \ln 3}{x(x-2)} = 0$ (1t)

Odg: $2 \ln 3 \neq 0$ ni

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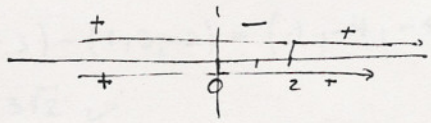
c) Df: $\frac{x-2}{2x} > 0$ ✓



(2t)

R:

$D_f = \{x;\ (x<0) \vee (x>2),\ x \in \mathbb{R}\}$ ✓

ničla:

$\frac{x-2}{2x} = 1$ (1t) (2t)

$x - 2 = 2x$

$x = -2$ (1t)

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d) $3^x = \frac{y-2}{2y}$ ✓

$2 \cdot y \cdot 3^x = y - 2$

$y(2 \cdot 3^x - 1) = -2$ ✓ (3t)

$y = -\frac{2}{2 \cdot 3^x - 1}$ ali $y = \frac{2}{1 - 2 \cdot 3^x}$ ✓

CILJI: 1, 2, 4, 6