

**Zadatak 8.** Odredi inverzne funkcije ovih logaritamskih funkcija:

- 1)  $f(x) = \log_2 x$ ;
- 2)  $f(x) = -\log_5(x - 1)$ ;
- 3)  $f(x) = \log_3 x + 2$ ;
- 4)  $f(x) = \log_2(x - 3) - 1$ ;
- 5)  $f(x) = -\frac{1}{2} \log_2(x + 3) + 1$ ;
- 6)  $f(x) = -2 \log_{\frac{1}{2}}(x - 1) + 3$ .

**Rješenje.**

1)  $f(x) = \log_2 x$

$$x = \log_2 y \implies f^{-1}(x) = 2^x$$

2)  $f(x) = -\log_5(x - 1)$

$$x = \log_5 \frac{1}{y - 1} \implies \frac{1}{y - 1} = 5^x \implies y - 1 = 5^{-x} \implies f^{-1}(x) = 1 + 5^{-x}$$

3)  $f(x) = \log_3 x + 2$

$$x = \log_3 y + 2 \implies \log_3 y = x - 2 \implies f^{-1}(x) = 3^{x-2}$$

4)  $f(x) = \log_2(x - 3) - 1$

$$x = \log_2(y - 3) - 1 \implies \log_2(y - 3) = x + 1 \implies f^{-1}(x) = 3 + 2^{x+1}$$

5)  $f(x) = -\frac{1}{2} \log_2(x + 3) + 1$

$$x = -\frac{1}{2} \log_2(y + 3) + 1 \implies \log_2 \sqrt{y + 3} = 1 - x \implies \sqrt{y + 3} = 2^{1-x} \\ \implies f^{-1}(x) = -3 + 2^{2-2x}$$

6)  $f(x) = -2 \log_{\frac{1}{2}}(x - 1) + 3$

$$x = 2 \log_2(y - 1) + 3 \implies 2 \log_2(y - 1) = x - 3 \implies \log_2(y - 1) = \frac{x - 3}{2} \\ \implies f^{-1}(x) = 1 + 2^{\frac{x-3}{2}}$$