Zadatak 2. Odredi inverznu funkciju sljedećih realnih funkcija:

1) $f(x) = \dfrac{2}{x-1}$;
 2) $f(x) = \dfrac{2x}{x+2}$;

3) $f(x) = x^3 - 2$;
 4) $f(x) = -\dfrac{1}{2}x^3 + 8$.

Rješenje. **1)** $f(x) = \dfrac{2}{x-1}, \; x \neq 1$

$$x = \frac{2}{y-1} \implies \frac{1}{x} = \frac{y-1}{2} \implies y - 1 = \frac{2}{x} \implies f^{-1}(x) = \frac{2}{x} + 1, x \neq 0$$

2) $f(x) = \dfrac{2x}{x+2}, \; x \neq -2$

$$x = \frac{2y}{y+2} \implies 2y = xy + 2x \implies (2-x)y = 2x \implies f^{-1}(x) = \frac{2x}{2-x}, x \neq 2$$

3) $f(x) = x^3 - 2$

$$x = y^3 - 2 \implies y = x + 2 \implies f^{-1}(x) = \sqrt[3]{x+2},$$

4) $f(x) = -\dfrac{1}{2}x^3 + 8$

$$x = -\frac{1}{2}y^3 + 8 \implies 2x = -y^3 + 16 \implies y^3 = -2x + 16 \implies f^{-1}(x) = \sqrt[3]{-2x+16}.$$