

Zadatak 5. Koju vrijednost treba imati funkcija f u naznačenoj točki da bi u toj točki bila neprekinuta:

$$1) f(x) = \frac{x^2 - 2x - 3}{x - 3}, x = 3;$$

$$2) g(u) = \frac{1 + u^3}{1 - u^2}, u = -1;$$

$$3) h(t) = \frac{t^2 - 5t + 6}{t^2 - t - 6}, t = 3?$$

Rješenje.

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

$$\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{x - 3} = \lim_{x \rightarrow 3} \frac{(x - 3)(x + 1)}{x - 3} = \lim_{x \rightarrow 3} (x + 1) = 4$$

$$\implies \text{ mora biti } f(3) = 4$$

$$2) g(u) = \frac{1 + u^3}{1 - u^2}, u = -1,$$

$$\lim_{u \rightarrow -1} \frac{1 + u^3}{1 - u^2} = \lim_{u \rightarrow -1} \frac{(1 + u)(1 - u + u^2)}{(1 - u)(1 + u)} = \lim_{u \rightarrow -1} \frac{1 - u + u^2}{1 - u} = \frac{3}{2}$$

$$\implies \text{ mora biti } g(-1) = \frac{3}{2}$$

$$3) h(t) = \frac{t^2 - 5t + 6}{t^2 - t - 6}, t = 3,$$

$$\lim_{t \rightarrow 3} \frac{t^2 - 5t + 6}{t^2 - t - 6} = \lim_{t \rightarrow 3} \frac{(t - 2)(t - 3)}{(t - 3)(t + 2)} = \lim_{t \rightarrow 3} \frac{t - 2}{t + 2} = \frac{1}{5}$$

$$\implies \text{ mora biti } h(3) = \frac{1}{5}$$