

**Zadatak 13.** Izračunaj sljedeće limese:

$$1) \lim_{x \rightarrow 1^+} \frac{|x-1|}{x-1};$$

$$2) \lim_{x \rightarrow -2^-} \frac{|x+2|}{x+2};$$

$$3) \lim_{x \rightarrow 1^+} \frac{\sqrt{(x-1)^2}}{|x-1|};$$

$$4) \lim_{x \rightarrow 1^-} \frac{\sqrt{(x-1)^2}}{|x-1|};$$

$$5) \lim_{x \rightarrow 0^+} \left( \frac{1}{x} - \frac{1}{|x|} \right);$$

$$6) \lim_{x \rightarrow 0^-} \left( \frac{1}{x} + \frac{1}{|x|} \right);$$

$$7) \lim_{x \rightarrow 2^+} \frac{x-2}{\sqrt{x^2-4}};$$

$$8) \lim_{x \rightarrow 2^-} \frac{x-2}{\sqrt{4-x^2}};$$

$$9) \lim_{x \rightarrow 2^+} \left( \frac{1}{x-2} - \frac{4}{x^2-4} \right).$$

*Rješenje.*

$$1) \lim_{x \rightarrow 1^+} \frac{|x-1|}{x-1} = 1;$$

$$2) \lim_{x \rightarrow -2^-} \frac{|x+2|}{x+2} = -1;$$

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

$$4) \lim_{x \rightarrow 1^-} \frac{\sqrt{(x-1)^2}}{|x-1|} = \lim_{x \rightarrow 1^-} \frac{|x-1|}{|x-1|} = 1;$$

$$5) \lim_{x \rightarrow 0^+} \left( \frac{1}{x} - \frac{1}{|x|} \right) = 0;$$

$$6) \lim_{x \rightarrow 0^-} \left( \frac{1}{x} + \frac{1}{|x|} \right) = 0;$$

$$7) \lim_{x \rightarrow 2^+} \frac{x-2}{\sqrt{x^2-4}} = \lim_{x \rightarrow 2^+} \sqrt{\frac{x-2}{x+2}} = 0;$$

$$8) \lim_{x \rightarrow 2^-} \frac{x-2}{\sqrt{4-x^2}} = \lim_{x \rightarrow 2^-} \sqrt{\frac{(x-2)^2}{(2-x)(2+x)}} = \lim_{x \rightarrow 2^-} \sqrt{\frac{2-x}{2+x}} = 0;$$

$$9) \lim_{x \rightarrow 2^+} \left( \frac{1}{x-2} - \frac{4}{x^2-4} \right) = \lim_{x \rightarrow 2^+} \frac{x+2-4}{x^2-4} = \lim_{x \rightarrow 2^+} \frac{x-2}{(x-2)(x+2)} = \frac{1}{4}.$$