University of Bahrain
Department of Mathematics
MATHS101: Calculus I
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Worksheet: One–sided Limits

Students' Name: _____

1. Consider

$$f(x) = \begin{cases} \dfrac{x^2-4}{x-2}, & 1.5 < x < 2 \\ 5x^2+1, & x \geqslant 2 \\ \dfrac{x^2-1}{x-1}, & x \neq 1 \\ 3, & x < 0 \end{cases}$$

Find:

1. $\lim\limits_{x\to 1^+} f(x)$
2. $\lim\limits_{x\to 1^-} f(x)$
3. $\lim\limits_{x\to 1} f(x)$
4. $\lim\limits_{x\to 2} f(x)$
5. $\lim\limits_{x\to 0} f(x)$
6. $\lim\limits_{x\to 1.5} f(x)$

7. $\lim_{x \to -1} f(x)$

2. Find

$$\lim_{x \to -2^+} (x+3)\frac{|x+2|}{(x+2)}$$

3. Find

$$\lim_{x \to 0^+} \frac{x}{\sqrt{x^2}}$$