

University of Bahrain  
Department of Mathematics  
MATHS101: Calculus I  
Dr. Abdulla Eid



## Worksheet: Limits

Students' Name: \_\_\_\_\_

1. Using the table to find the following limits:

1.  $\lim_{x \rightarrow 5} x$

2.  $\lim_{x \rightarrow a} x$

3.  $\lim_{x \rightarrow a} 7$

4.  $\lim_{x \rightarrow a} k$

5.  $\lim_{x \rightarrow 0} f(x)$ , where

$$f(x) = \begin{cases} 0, & x < 0 \\ 1, & x \geq 0 \end{cases}$$

2. Find the following limits:

1.  $\lim_{x \rightarrow 1} \frac{x^2 - 2x + 1}{x - 1}$

2.  $\lim_{y \rightarrow 0} \frac{5y^3 + 8y^2}{3y^4 - 16y^2}$

3.  $\lim_{x \rightarrow 1} \frac{x^2 - 3x + 4}{x^2 - 6x + 7}$

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$$4. \lim_{x \rightarrow 2} \frac{x^3 - 8}{3x^2 - x - 10}$$

$$5. \lim_{x \rightarrow 2} \frac{x^4 - 16}{x^3 - 8}$$

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$$6. \lim_{x \rightarrow 9} \frac{\sqrt{x-5} - 2}{x-9}$$

$$7. \lim_{x \rightarrow 4} \frac{x-4}{\sqrt{x}-2}$$

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8.  $\lim_{x \rightarrow -3} \left( \frac{x+3}{x^2-9} \right)^{102}$

9.  $\lim_{x \rightarrow 0} f(x)$  if  $\sqrt{5-2x^2} \leq f(x) \leq \sqrt{5-x^2}$ .

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