

The Open University of Sri Lanka

B.Sc/B.Ed Degree programme

Pure Mathematics – Level 04

PEU4301- Real Analysis II

No Book Test (OBT)- 2023/2024



Date: 27.01.2024

Time: 10.30 a.m. – 11.30 a.m.

Answer All Questions.

1. (a) Let  $f(x) = x^4, x \in (0, \infty)$ . Show that  $\lim_{x \rightarrow 0^+} f(x) = 0$ .

(b) Deduce that  $\lim_{x \rightarrow 0^+} x^4 \cos\left(\frac{1}{x^2}\right) = 0, x \in (0, \infty)$ .

2. Prove that  $\lim_{x \rightarrow \infty} \frac{1+x^3}{x-3} = \infty, x \in (0, \infty)$ .

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