

MALABAR CHRISTIAN COLLEGE
 First Semester Internal Examination, September 2026
MINOR COURSE IN MATHEMATICS
BASIC CALCULUS
MAT1MN103

Time : 1 Hr

Max Marks : 35

Name:	Marks	Section A		Total Marks
Class:	Scored	Section B		
		Section C		

Section A*(Each question carries 3 Marks, Max Marks for Section - 7)*

1. For the function f defined by $f(x) = 7x - 4$. Evaluate each expression

- (a) $f(0)$
 (b) $f(-3)$

2. Find the domain and range of the function $f(x) = 4x^2$

3. Given $f(x) = 2x - 3$ and $g(x) = \cos x$, find $g \circ f$

Section B*(Each question carries 6 Marks, Max Marks for Section - 18)*

4. Determine whether the function is one-to-one. If it is, find its inverse $f(x) = x^3 - 1$
5. Solve $\arctan(2x - 3) = \pi/4$ for x
6. Discuss the existence of the limit $\lim_{x \rightarrow 0} \frac{1}{x^2}$
7. Solve $\lim_{x \rightarrow e} \ln x^3$

Section - C*(Answer any one question, Each question carries 10 Marks)*

8. Discuss the continuity of the given functions

- (a) $f(x) = \sqrt{1 - x^2}$
 (b) $f(x) = 3 - \sqrt{9 - x^2}$ on $[-3, 3]$

9. Find the derivative of the given functions

- (a) $f(x) = \frac{4 - 3x - x^2}{x^2 - 1}$
 (b) $y = (x^2 - 3x + 2)(x^3 + 1)$