

**Vidya Vikas Mandal's**  
**Shree Damodar College of Commerce & Economics, Margao-Goa**  
**FY BBA, Term-III, End Term Assessment Repeat March 2024**  
**BBCB030 – Business Mathematics 2**

**Duration: 1 hr. 30 min****Max Marks: 25****Instructions:**

- 1) Start each question on fresh page.
- 2) Figures to the right indicate maximum marks.

**Q1. Answer the following:**

1. Prove that the function  $f: \mathbf{R} \rightarrow \mathbf{R}$ ,  $f(x) = 2x^3 + 9$  is a bijection. [2 Marks]
2. Find the derivative of  $y = (x^2 - 2x + 3)^{100}$ . [2 Marks]
3. Find  $\int x \cos(x) dx$  [1 Mark]

**Q2. Attempt the following:****[5x4=20 Marks]**

1. Examine the continuity of  $f$  at  $x = 5$  if  $f(x) = \begin{cases} \frac{x^2-25}{x-5} & x \neq 5 \\ 10 & x = 5 \end{cases}$
2. The demand function  $p$  in terms of quantity demanded  $D$  is given by  $p = 30 + 12D - 4D^2$ . Find total revenue, average revenue and marginal revenue when the demand is 4 units.
3. Find the maxima and minima of  $f(x) = 2x^3 - 3x^2 + 6$ .
4. If the marginal revenue function for a certain product is  $MR = 4x^3 + 6x^2 + 10x + 1$ . Find the revenue function when  $x = 10$ .
5. Find the inverse and range of  $y = 3x - 7$  given that  $y = f(x)$  is a bijection.

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