

## Worksheet: Continuity and Differentiability

Gujarat State Board · Class 12 · Mathematics · 3 questions · 11 marks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 11

**Q1.** Find the value of  $k$  that makes  $f(x) = \begin{cases} kx + 1 & \text{if } x \leq 0 \\ \cos x & \text{if } x > 0 \end{cases}$  continuous at  $x = 0$ . [3 marks]

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**Q2.** Differentiate  $y = \sin(x)$  with respect to  $x$ . [4 marks]

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**Q3.** Verify the Mean Value Theorem for  $f(x) = x(x-1)(x-2)$  on  $[0, 1/2]$ . [4 marks]

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