

King Saud University
Department of Mathematics
M-203
(Differential and Integral Calculus)
Second-Mid Term Examination
(First Semester 1432/1433)

Max. Marks: 20

Time: 90 minutes

Marking Scheme: Q:1(4), Q:2(4), Q:3(4), Q:4(4), Q:5(4).

- Q. No: 1** Reverse the order of integration and evaluate the resulting integral $\int_{-2}^2 \int_{x^2}^4 dy dx$.
- Q. No: 2** Use **polar coordinates** to evaluate the integral $\iint_R xy dA$, where R is the region bounded by the circles $x^2 + y^2 = 1$ and $x^2 + y^2 = 4$.
- Q. No: 3** Find the **surface area** of the portion of the **hemi-sphere** $z = \sqrt{25 - x^2 - y^2}$ that lies above the circle $x^2 + y^2 = 9$ in the xy-plane.
- Q. No: 4** Find the **mass** of a **triangular lamina** with vertices (0,0), (1,0), and (0,2) and having area mass density $\delta(x, y) = 1 + 3x + y$.
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- Q. No: 5** Use **triple integral** to find the volume of the solid bounded by the cylinder $x^2 + y^2 = 1$ and the graphs of the equations $x + z = 1$ and $z = 0$.