King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics — Spring Semester (Term 162)

Quiz 5 — Calculus III — Dr. Taleb Alkurdi

Name_____ ID_____ Serial Number _____

Important Note: Please show your work in order to get the full grade. There is only one point for the final answer and the rest will be for the details of the work.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

1) Set up the triple integral for the volume of the sphere $\varrho = 10$ in spherical coordinates. 1) _____

A) $\int_0^{2\pi}\int_0^{\pi}\int_0^{10} \varrho^2 \sin\phi \, d\varrho \, d\phi \, d\theta$

B) $\int_0^{2\pi}\int_0^{\pi/2}\int_0^{10} d\varrho \, d\phi \, d\theta$

C) $\int_0^{2\pi}\int_0^{\pi}\int_0^{10} d\varrho \, d\phi \, d\theta$

D) $\int_0^{2\pi}\int_0^{\pi/2}\int_0^{10} \varrho^2 \sin\phi \, d\varrho \, d\phi \, d\theta$

Find the volume of the indicated region.

2) the region bounded above by the sphere $x^2 + y^2 + z^2 = 36$ and below by the cone $z = \sqrt{x^2 + y^2}$ 2) _____

A) $72\pi(2 - \sqrt{3})$ B) $72\pi(2 - \sqrt{2})$ C) $54\pi(2 - \sqrt{3})$ D) $54\pi(2 - \sqrt{2})$