

MA 261 QUIZ 12

APRIL 16, 2019

If you do not know how to do any one of these problems, circle “**(E) I don’t know**” as your answer choice. You will receive **one point** for doing that. **Each problem** is worth **five points**. You get **two points** for writing your **full name** and **three points** for writing your **PUID and section number**.

Problem 12.1. Let S be the surface parametrized by $\mathbf{r}(u, v) = \langle v \cos u, v \sin u, 2v^2 \rangle$ with $0 \leq u \leq 2$ and $0 \leq v \leq 2$. Then S is part of a

- (A) circular paraboloid
- (B) cone
- (C) cylinder
- (D) ellipsoid
- (E) I don’t know how to do this problem

Problem 12.2. Let S be the part of the sphere $x^2 + y^2 + z^2 = 1$ above the plane $z = 1/2$. Evaluate the surface integral

$$\iint_S 12z^2 dS.$$

Hint: Use the parametrization $\mathbf{r}(u, v) = \langle \sin \phi \cos \theta, \sin \phi \sin \theta, \cos \phi \rangle$ and apply u -substitution.

- (A) 2π
- (B) π
- (C) 7π
- (D) 8π
- (E) I don’t know how to do this problem