Surface Integrals

Welcome to the Weekly Review for MATH 2451. This week’s review talks about Surface Integrals. We would like to thank Leszek Kisielewski and the Spring 2015 MATH 2451 students for allowing us to film the Weekly Reviews.

The following problems are presented in the video. Thank you!

Part A: Surface Integrals

1. Background Information
2. Find a suitable parameterization for a sphere of radius $a$ centered at the origin.
3. Find the surface area defined by \( z^2 = x^2 + y^2 \) with \( 0 \leq z \leq 1 \).
4. Find a suitable parameterization for a Torus.
5. What does it mean for a surface to be smooth at a point?

6. Evaluate $\int \int_S xz \, ds$ over the portion of the sphere $x^2 + y^2 + z^2 = 4$ with $x \leq 0$, $z \leq 0$, and $y \geq 0$. 