## Created by T. Madas

## **Question 15**

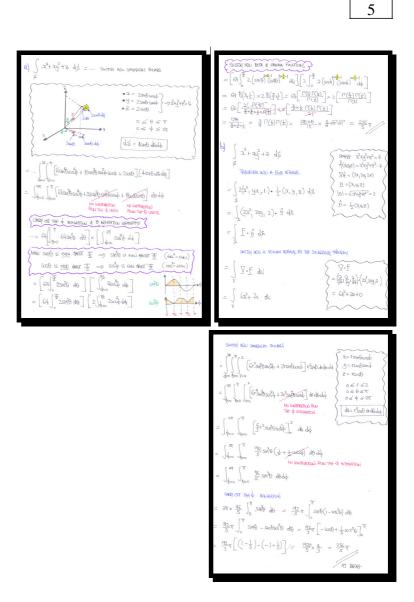
The surface S is the sphere with Cartesian equation

$$x^2 + y^2 + z^2 = 4$$

a) By using Spherical Polar coordinates,  $(r, \theta, \varphi)$ , evaluate by direct integration the following surface integral

$$I = \bigoplus_{S} \left( x^4 + xy^2 + z \right) dS \,.$$

**b**) Verify the answer of part (**a**) by using the Divergence Theorem.



 $256\pi$ 

Created by T. Madas