Math 2415 – Calculus III **Assignment 3-B**

Professor: Fred Khoury

***Directions*:** Show your work whenever possible: a correct answer is worth 0 point without any supporting work.

1. Evaluate $\int_1^{\ln 8}\int_0^{\ln 4}\int_0^{\ln 2} e^{-x-y-2z}\,dxdydz$

2. Evaluate $\int_0^{\pi/2}\int_0^{1}\int_0^{\pi/2} \sin\pi x\ \cos y\ \sin 2z\ dydxdz$

3. Evaluate $\int_0^{2\pi}\int_0^{\pi/2}\int_0^{2\cos\varphi} \rho^2\sin\varphi\ d\rho d\varphi d\theta$

4. Evaluate the integrals in cylindrical coordinates $\int_{-2}^{2}\int_{-1}^{1}\int_0^{\sqrt{1-z^2}} \frac{1}{\left(1+x^2+z^2\right)^2}\,dxdzdy$

5. Find the volume of the cap of a sphere of radius R with height h.