Math2210 Quiz 11 (Sections 13.8, 14.1)   Summer, 2010   Dylan Zwick

Name _____ Date _____

1. (14 points) Evaluate $\int_{-3}^{3} \int_{-\sqrt{9-x^2}}^{\sqrt{9-x^2}} \int_{-\sqrt{9-x^2-z^2}}^{\sqrt{9-x^2-z^2}} (x^2+y^2+z^2)^{3/2} \, dy \, dz \, dx$.

Answer : _____

2. *(14 points)* Calculate the determinant of the Jacobian J(u,v) for the change of variables $x = u^2 - 2uv$ $y = v^3 + 3uv^2$

Answer : _____

3. *(3 points each)* If f(x,y,z) is a scalar function and **F**(x,y,z) is a vector field, which of the following make sense (circle one):

a) $\nabla \cdot \nabla (f)$ Makes sense.   Does not make sense.

b) div(grad(f))   Makes sense.   Does not make sense.

c) grad(div(**F**))   Makes sense.   Does not make sense.

d) $\nabla \times \nabla (f)$ Makes sense.   Does not make sense.