"QUIZ" for Lecture 16

NAME: (print!) Andrew King **Section:** 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q16FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 2, 8:00pm

1. Compute the Jacobian of the transfomation

$$\Phi(r,s) = (rs, r+s)$$

$x = rs \quad y = r+s$

$J = (x_r)(y_s) - (x_s)(y_r) = s - r$

$J = s - r$

2. Let $\mathcal{D} = \Phi(\mathcal{R})$ where $\Phi(u,v) = (u+v, v^2)$ and $R = [0,6] \times [1,2]$. Calculate

$$\int\int_{\mathcal{D}} y\, dA \quad .$$

$J = x_u y_v - x_v y_u = (1)(2v) - (1)(0) = 2v$

(Note: it is not necessary to compute D).

$$\iint_R y J\, dA = \iint_R (v^2)(2v)\, dA = \iint_R 2v^3\, dA$$

$$\int_0^6 \int_1^2 2v^3\, dv\, du = 45$$