

"QUIZ" for Lecture 16

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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 transformation

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

$$\rightarrow J = (s)(1) - (r)(1) = \boxed{s-r}$$

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

$$\iint_{\mathcal{D}} y \, dA \quad .$$

(Note: it is not necessary to compute \mathcal{D}).

$$\rightarrow J = (1)(2v) - (1)(0) = 2v$$

$$\rightarrow \iint_{\mathcal{R}} 2v^3 \, dA$$

$$\rightarrow \int_0^6 \int_1^2 2v^3 \, dv \, du = \boxed{45}$$