NAME: (print!) Fayed Raza   **Section:** 6

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

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

$$\begin{bmatrix} r & s \\ s & r \end{bmatrix} \qquad \boxed{r^2 - s^2}$$

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 D).

$$\int_3^4 \int_6^{36} y \, dy \, dz \qquad \int_3^4 630 \, dz$$

$$\frac{y^2}{2} \Big|_6^{36} \qquad 630(4) - 6 \times (3) = 630$$

$$\frac{36^2}{2} - \frac{36}{2} = \frac{1260}{2} = 636$$

$$\boxed{630}$$