Wenhao Li   All

NAME: (print!) _____   **Section:** _____

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, y=r+s
dx/dr=s    dx/ds=r
dy/dr=1    dy/ds=1
s*1-r*1=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

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

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

```
x=u+v, y=v^2
(x, y) = (0, 6) u=-sqrt6 v=sqrt6
(x, y) = (1, 2) u=1-sqrt2 v=sqrt2
dx/du=1 dx/dv=1
dy/du=0 dy/dv=2v
1*2v-0=2v
int(int v^2*2v)dA
=int(int 2v^3)dA
u+v=1
2int(int v^3)dvdu v=0..1-u u=0..1
=1/10
```