"QUIZ" for Lecture 15

NAME: (print!) Wenhao Li **Section:** All

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: qXFirstLast.pdf) ASAP BUT NO LATER THAN Oct. 29, 8:00pm

1. Use polar coordinates to compute the double integral

$$\int\int_D xy\,dA \quad ,$$

where

$$D = \{(x,y)\,|\,x^2+y^2 \le 1\,,\, x \ge 0\,,\, y \ge 0\,\} \quad .$$

x=sqrt1-y^2
y=sqrt1-x^2
r^2<=1
r=±1
r=1
0<=r<=1
0<=theta<=Pi

int(int xy) dA
=int(int rcostheta*rsintheta*r dr dtheta) r=0..1 theta=0..Pi
=cos sinPi^3/12

2. Evaluate the iterated integral by converting it to polar coordinates

$$\int_0^1 \int_0^{\sqrt{1-y^2}} e^{x^2+y^2}\,dx\,dy \quad .$$

Note: The previous version had a typo ($dy\,dx$ instead of $dx\,dy$, that made it nonsense). I thank Yidi "Wendy" Weng for pointing it out (and see won a dolllar).

x=sqrt1-y^2
0<=r<=1
0<=theta<=Pi/2
int(int e^r^2*r drdtheta) r=0..1 theta=0..Pi/2
=Pi(e-1)/4