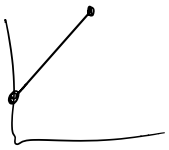
"QUIZ" for Lecture 18

NAME: (print!) Jennifer Gonzalez **Section:** 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q18FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 9, 8:00pm

1. Let C be the line segment from $(0,1)$ to $(2,3)$, find $\int_C xy\,ds$.



$r(t) = (1-t)\langle 0,1\rangle + t(2,3)$

$= \langle (1-t)\cdot 0 + t\cdot 2,\ (1-t)\cdot 1 + t3\rangle$

$= \langle 2t,\ 1+2t\rangle$

$x = 2t \qquad y = 1+2t$

$\int_0^1 2t(1+2t)\,dt = \int_0^1 2t + 4t^2\,dt$

$= t^2 + \frac{4}{3}t^3 \Big|_0^1 = 1 + \frac{4}{3} = \boxed{\frac{7}{3}}$

2. Evaluate

$$\int_C xy^2\,dx + x^2y\,dy \quad ,$$

where C is $x : t^2$, $y = t^3$, $0 \le t \le 1$.

$\longrightarrow \int t^2\cdot t^3\cdot 2t\,dt + (t^2)^2\cdot t^3\cdot 3t^2\,dt$

$= \int_0^1 (2t^6 + 3t^9)\,dt$

$= \frac{2}{7}t^7 + \frac{3}{10}t^{10}\Big|_0^1$

$= \frac{2}{7} + \frac{3}{10}$

$= \boxed{\frac{41}{70}}$