NAME: (print!) _Fady Besada_   **Section:** _22_

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 $\int_C xy\,ds$.

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

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

$\rightarrow r(t) = \langle 2t, 1+2t\rangle, \quad x=2t, \quad y=1+2t, \quad t=[0,1]$

$\rightarrow r'(t) = \langle 2,2\rangle$

$\rightarrow |r'(t)| = \sqrt{8}$

$\rightarrow \int_0^1 (2t)(1+2t)(\sqrt{8})\,dt = \boxed{\dfrac{5\sqrt{2^5}}{3}}$

2. Evaluate
$$\int_C xy^2\,dx + x^2 y\,dy \quad ,$$
where C is $x:t^2$, $y=t^3$, $0\le t\le 1$.

$\rightarrow dx = 2t\,dt, \quad dy = 3t^2\,dt$

$\rightarrow \int_0^1 (t^2)(t^3)^2(2t)\,dt + \int_0^1 (t^2)(t^3)(3t^2)\,dt = \boxed{\dfrac{1}{2}}$