

"QUIZ" for Lecture 18

NAME: (print!) Gillian Mulvey Section: _____

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 $\int_C xy \, ds$.

$$\langle 1, 0 \rangle + t \langle 2, 3 \rangle = \langle 2t+1, 3t \rangle \quad x=2t+1 \quad y=3t \quad 0 \leq t \leq 1$$

$$\sqrt{(2)^2 + (3)^2} = \sqrt{4+9} = \sqrt{13}$$

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

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

$$3 \left(\frac{2t^3}{3} + \frac{t^2}{2} \right) \Big|_0^1 = 3 \left[\left(\frac{2(1^3)}{3} + \frac{1^2}{2} \right) - 0 \right] = 3 \left(\frac{1}{3} + \frac{1}{2} \right) = \frac{15\sqrt{13}}{6}$$

2. Evaluate

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

where C is $x=t^2, y=t^3, 0 \leq t \leq 1$. $x'=2t \quad y'=3t^2$

$$\int_0^1 t^2(t^3)^2 \cdot 2t + (t^2)^2 \cdot t^3 \cdot 3t^2 \, dt$$

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

$$5 \int_0^1 t^9 \, dt$$

$$\frac{5t^{10}}{10} \Big|_0^1 = \frac{5}{10} = \frac{1}{2}$$