

"QUIZ" for Lecture 18

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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 $\int_C xy \, ds$.

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

$$x = 2t$$

$$y = 1+t$$

$$\int_0^1 (2t)(1+t)\sqrt{8} \, dt = \boxed{\frac{14\sqrt{2}}{3}}$$

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

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

$$ds = \sqrt{8} \, dt$$

2. Evaluate

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

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

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

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