

"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 $\int_C xy \, ds$.

$\vec{PQ} = \langle 2, 2 \rangle$

$0 \text{ to } \pi/2$

$x=2$

$y=2$

$\int_0^{\pi/2} 4(0) \, dt$

$= t \Big|_0^{\pi/2} = \pi/2$

$\left\{ \begin{array}{l} x'(t) = 0 \\ y'(t) = 0 \end{array} \right.$

$\sqrt{x'(t)^2 + y'(t)^2} = \sqrt{0+0} = 0$

2. Evaluate

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

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

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

$= \int_0^1 (t^2)(t^6)(2t) \, dt + t^4 (t^3)(3t^2) \, dt$

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

$= \int_0^1 5t^9 \, dt = \left[\frac{1}{2} t^{10} \right] \Big|_0^1$

$= \boxed{\frac{1}{2}}$