

"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 $\int_C xy \, ds$.

$$\begin{aligned} x &= 2\cos\theta \\ y &= 2\sin\theta \\ 2 \int \cos\theta \sin\theta \, d\theta \\ 2 \int \sin 2\theta \, d\theta \\ -\cos 2\theta \end{aligned}$$

2. Evaluate

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

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

$$\begin{aligned} x &: \cos^2\theta \\ y &: \sin^3\theta \end{aligned} \quad \int (\cos^2\theta \sin^6\theta + \cos^4\theta \sin^4\theta)$$

$$\int \cos^2\theta \sin^4\theta (\sin^2\theta + \cos^2\theta) \, d\theta$$

$$\int \cos^2\theta \sin^4\theta \, d\theta = (1 - \cos^2\theta)(1 + \cos^2\theta)$$

$$\int \cos^2\theta (1 - \cos^2\theta)^2 \, d\theta$$

$$\int \cos^2\theta (1 - 2\cos^2\theta + \cos^4\theta) \, d\theta$$

$$\int \cos^2\theta = 2(\cos^3\theta + \cos\theta)$$

$$\sin\theta - \frac{2}{3}\sin^3\theta + \frac{\sin^5\theta}{5}$$