

You must show **all** work to receive full credit. All work is to be your own.

09/28/2020

This is a closed books and notes test. Be organized. Total points: **20**

19:44- 19:57

1. §10.1 Line Integral. Work done by a force. Calculate $\int_C \mathbf{F}(\mathbf{r}) \cdot d\mathbf{r}$ for the following data. If \mathbf{F} is a force, this gives the work done in the displacement along C . (Show the details.) 10 points
 $\mathbf{F} = \sin x \mathbf{i} + \cos y \mathbf{j} + xz \mathbf{k}$, $C : \mathbf{r}(t) = t^3 \mathbf{i} - t^2 \mathbf{j} + t \mathbf{k}$ from $(0, 0, 0)$ to $(1, -1, 1)$.

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2. §10.2 Show that the field $\mathbf{F}(x, y, z) = \sin y \mathbf{i} + (x \cos y + \cos z) \mathbf{j} - y \sin z \mathbf{k}$ is conservative and evaluate the integral $\int_C \mathbf{F} \cdot d\mathbf{r}$ along $C : \mathbf{r}(t) = \sin t \mathbf{i} + t \mathbf{j} + 2t \mathbf{k}, 0 \leq t \leq \frac{\pi}{2}$. Show the details of your work. 10 points