MAT 397 Spring 2016 Quiz 10 Name: **Score:** $\frac{}{10}$

1. Compute the line integral $\int_{\mathcal{C}} f(x,y)\, ds$, where $f(x,y) = 4x^2y$ and $\mathcal{C} : \vec{r}(t) = \langle \cos 2t, \sin 2t \rangle$, $0 \leq t \leq \frac{\pi}{2}$.

2. Compute the line integral $\int_{\mathcal{C}} \vec{F} \cdot d\vec{r}$, where $\vec{F} = \langle 3x, 2z, z - y \rangle$ and $\mathcal{C} : \vec{r}(t) = \langle t, -t, t^2 \rangle$, $0 \leq t \leq 1$.