

MATH 251: Quiz 7

December 10, 2015

Name: _____ Sec: _____

1. Let $c(t) = \langle 3 \sin(t), 4t, 3 \cos(t) \rangle$ be a curve, over the range $0 \leq t \leq 2\pi$. For the vector field $\vec{F}(x, y, z) = \langle z, x^2 + y^2, 1 \rangle$ and the function $f(x, y, z) = y^2 + z^2$, compute

$$\int_{c(t)} \vec{F} \cdot d\vec{s} \quad \text{and} \quad \int_{c(t)} f \, ds$$

2. Determine if the vector field $\vec{F} = \langle 2xyz + yze^{xy}, x^2z + xze^{xy} + 2y, x^2y + e^{xy} \rangle$ is conservative, and if so, find a potential function for \vec{F} .