

Extra Quiz. Nov. 14.

1. Evaluate the line integral $\int_C x^2 ds$ where C is the upper half of the circle $x^2 + y^2 = 9$.
2. Evaluate the line integral $\int_C xy dx + y dy$ where C is the curve $y = \sin x$, $0 \leq x \leq \frac{\pi}{2}$.
3. Find the work done by the force field $\vec{F}(x, y, z) = (x - y)\vec{i} + 3z\vec{j} + (y - z)\vec{k}$ in moving an object along the straight line segment from $(1, 2, 0)$ to $(3, 1, 4)$.
4. Let $\vec{F} = P\vec{i} + Q\vec{j}$ be a vector field defined in the whole xy -plane and suppose that P and Q have continuous partial derivatives. Copy and complete the following four statements which are all equivalent (i. e. either all are true or all are false).
 1. There is a function f such that ...
 2. The line integral $\int_C P dx + Q dy$ is ...
 3. $\int_C P dx + Q dy = 0$ for every ...
 4. $\frac{\partial P}{\partial y} = \dots$