Name: _____

Show your work fully for all questions. Quiz has **front** and **back** sides.

Problem 1: Find the gradient vector field for the function $f(x, y, z) = \sqrt{x^2 + y^2 + z^2}$

Problem 2: Evaluate the integral $\int_C \frac{x}{y} ds$, where C is the curve $x = y^2$ from $(0, 0)$ to $(1, 1)$.

Problem 3: Evaluate the integral $\int_C F \cdot dr$, for the vector field $F(x, y) = x^2 i + y^2 j$ and C is the arc of the parabola $y = 2x^2$ from $(-1, 2)$ to $(2, 8)$.