

Name and last 4 digits of student ID: _____

Set up (and simplify) the surface integrals $\iint_S f \, dS$ and $\iint_S \nabla f \cdot d\vec{S}$ where $f(x, y, z) = xy^2 + z$ and \mathcal{S} is the surface given by $y^2 + z^2 = 9$, $z \geq 0$, and $-1 \leq x \leq 3$.