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Mathematics 206 Multivariable Calculus
Winter Semester 2010
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Quiz #18
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Let $M$ be the surface with equation $x^2 + y^2 + z = 9$ that is above the right triangle with vertices $(0, 0), (1, 0), \text{ and } (1, 2)$. $M$ can be parametrized by

$$f(s, t) = (s, t, 9 - s^2 - t^2), 0 \leq s \leq 1, 0 \leq t \leq 2s$$

As we learned from yesterday’s quiz, $\frac{\partial f}{\partial s} \times \frac{\partial f}{\partial t} = (3s^2, 3s^2, 1)$.

A. For the function $g(x,y,z) = xz$ set up but do not evaluate an iterated integral that gives the surface integral of $g$ over $M$.

B. For the function $F(x,y,z) = (x, y, x + y)$, set up but do not evaluate an iterated integral that gives the surface integral of $F$ over $M$. 