MATH 261 Quiz 12 Name: .
Student number:

Show all work. 5 points each.

1. Show $\mathbf{r}_x \times \mathbf{r}_y = \langle -g_x, -g_y, 1 \rangle$ if $\mathbf{r}(x, y) = \langle x, y, g(x, y) \rangle$.

2. **Set up** the integral, including limits of integration, for evaluating $\iint_S \mathbf{F} \cdot d\mathbf{S}$ where $\mathbf{F}(x, y, z) = \langle x, y, z \rangle$ and S is the part of the paraboloid $z = 4 - x^2 - y^2$ that lies above the plane $z = 0$