Each problem is worth 5 points. For full credit indicate clearly how you reached your answer.

1. Set up a double integral for the volume of the solid lying under the elliptic paraboloid \( x^2/4 + y^2/9 + z = 1 \) and above the square \( R = [-1,1] \times [-2,2] \).

\[
\iint_{R} \left( 1 - \frac{x^2}{4} - \frac{y^2}{9} \right) \, dx \, dy
\]

2. Set up a double integral for the volume of the solid lying under the paraboloid \( z = 9 - x^2 - y^2 \) and above the xy-plane.

\[
4 \int_{0}^{3} \int_{0}^{\sqrt{9-x^2}} (9 - x^2 - y^2) \, dy \, dx
\]

3. Compute the value of \( \int_{0}^{3} \int_{0}^{4} (4-x^2) \, dy \, dx \) [Hint: The TI-89 says it's 4].

\[
\int_{0}^{3} \int_{0}^{4} (4-x^2) \, dy \, dx = \int_{0}^{3} y(4-x^2) \bigg|_{0}^{4} \, dx
\]

\[
= \int_{0}^{3} x(4-x^2) \, dx = \int_{0}^{3} (4x - x^3) \, dx
\]

\[
= \left( 2x^2 - \frac{x^4}{4} \right) \bigg|_{0}^{3} = 8 - 4 + (0 - 0) = 4
\]