Suppose \( \mathbf{F} (x, y, z) = (x + z, y - x, z - y) \) and \( S \) is the solid lying above the region in the \( xy \)-plane bounded by \( y = x - x^2 \) and \( y = -x \), between the surfaces \( z = x \) and \( z = 1 + x^2 + y^2 \).

Use the Divergence Theorem to set up, but not evaluate, the integral \( \iiint_S \mathbf{F} \cdot n \, d\sigma \).