Name:...Serial#:..........................

Q.1: Let S consists of all vectors of the form $\{x, y, y + x, y - x\}$ in R^4. Determine whether S is a subspace of R^4.

Q.2: Prove the identity $\left\|\vec{F} + \vec{G}\right\|^2 + \left\|\vec{F} - \vec{G}\right\|^2 = 2\left(\left\|\vec{F}\right\|^2 + \left\|\vec{G}\right\|^2\right)$.

Q.3: Determine whether the vectors $i - j + k$, $8i + 2j - 4k$, and $3i + 6j - k$ are linearly independent or dependent.