Question 1. Let \( r = xi + yj + zk \). \( a = a_1i + a_2j + a_3k \) is a constant vector. Show that
\[
\text{curl}[(r \cdot r)a] = 2(r \times a)
\]
Question 2. Evaluate

\[ \int_C xy^2 \, dy \]

where \( C \) is the quarter circle defined by \( x = 4 \cos t, \ y = 4 \sin t, \ 0 \leq t \leq \pi/2. \)