Let \( \mathbf{F}(x, y) = (xy, x + y) \). Let \( R \) be the triangular region in the first quadrant bounded by the curves \( y = 0 \), \( x = 1 \), and \( y = x \). Show that Green's Theorem is true in this setting by calculating these two integrals: [Note that for Part B the boundary of the triangle must be parametrized in three pieces, \( C_1 \), \( C_2 \), and \( C_3 \) oriented correctly!]

A. \[
\iint_R \left[ \frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y} \right] \, dA = 
\]

B. \[
\oint_C \mathbf{F} \cdot d\mathbf{x} = \oint_{C_1} \mathbf{F} \cdot d\mathbf{x} + \oint_{C_2} \mathbf{F} \cdot d\mathbf{x} + \oint_{C_3} \mathbf{F} \cdot d\mathbf{x} = 
\]