Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Let $C$ be the path consisting of the triangle formed by the line segment from the origin to $(2,0)$, followed by the line segment from $(2,0)$ to $(2,5)$, and then by the line segment from $(2,5)$ back to the origin. Compute $\int_C (-y, 2x) \cdot d\vec{F}$.