(1) Evaluate $\int\int_R (x + y) \, dA$ where $R$ is the trapezoidal region with vertices given by $(0,0), (5,0), \left(\frac{5}{2}, \frac{5}{2}\right)$, and $(\frac{5}{2}, -\frac{5}{2})$ using the transformation $x = 2u + 3v$ and $y = 2u - 3v$.

(2) Convert $\int_0^3 \! \int_0^{\sqrt{9-y^2}} \int_0^{\sqrt{18-x^2-y^2}/\sqrt{x^2+y^2}} x^2 + y^2 + z^2 \, dz \, dx \, dy$ into spherical coordinates.

(3) Evaluate $\int_L xe^{yz} \, ds$ where $L$ is the line segment from $(0,0,0)$ to $(1,2,3)$.
(4) Evaluate \( \int_C xy^4 \, ds \) where \( C \) is the right half of a circle, \( x^2 + y^2 = 16 \) rotated in the counterclockwise direction.

(5) Repeat Problem 4, but travelling along the curve in the clockwise direction.

(6) Evaluate \( \int_C x \, ds \) for the closed curve starting at the point \((-2,4)\), along the parabola \( y = x^2 \) to the point \((1,1)\) and then along the horizontal line segment from \((1,1)\) back to \((-2,4)\).