[tex5] **Exact and inexact differentials**

(a) Show that the differential $dF_1 = xydx + x^2dy$ is inexact. Determine the value of the integral $\oint dF_1$ along the closed path depicted in the Figure.

(b) Show that $dF_2 = (2y^2 - 3x)dx + 4xydy$ is an exact differential. Determine the function $F_2(x, y)$.