[1] Find the volume bounded by $x^2 + y^2 = z$ and $x^2 + y^2 + z = 4$

[2] Find the integral $\int_{(0,0)}^{(1,2)} (2x + y)dy + (2y + x^2)dx$, through (i) $y = 2x$ (ii) $y^2 = 4x$

[3] Verify Green's theorem for the integral: $\oint_C (x + y)dx + (3x - y)dy$

where C is formed by $(x-1)^2 + y^2 = 1$ and $y = x$

[4] From the data (1, 2), (3, 4), (4, 10), (5, 8):

(a) Find the exponential curve that fits the data and find y` at $x = 1$.

(b) Write the table of differences of the data and obtain the value of y at $x = 0$.

Good Luck   *Dr. Mohamed H. Eid*