

H.W.

① Verify Stoke's theorem for  $\vec{F} = xy^2\hat{i} + y\hat{j} + z^2x\hat{k}$  for the surface of a rectangular lamina bounded by  $x=0, y=0, x=1, y=2, z=0$ .

② Prove by using Stoke's theorem that  $\int_C (e^x dx + 2y dy - dz) = 0$ , where  $C$  is the curve  $x^2 + y^2 = 4, z = 2$ .

③ Find the work done by the force  $\vec{F} = (2y+3)\hat{i} + xz\hat{j} + (yz-x)\hat{k}$  when it moves a particle from  $(0,0,0)$  to  $(2,1,1)$  along the curve  $x=2t^2, y=t, z=t^3$ . Ans.  $8\frac{8}{35}$