Assignment-3

1) Derive Euler's equation

2) Prove that the geodisic on a plane are straight lines

3) Solve $u_t = u_{xx}$ Subject to the condition $u(0,t) = 0$ $u(1,t) = 0$, $u(x,0) = \sin \pi x$ $0 \le t \le 0.1$ by taking $h = 0.2$ and by applying Bendre Schmidt explicit formula. hence find $u(0.2, 0.04)$ & $u(0.6, 0.06)$

4) Solve the elliptic eq^n $u_{xx} + u_{yy} = 0$ for the following square mesh with boundary values as shown in the fig Use Liebmann's method for 2nd & 3rd iteration.