$$\mathbf{V}_1 imes \mathbf{V}_2 = egin{bmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \ rac{\partial X}{\partial u} & rac{\partial Y}{\partial u} & 0 \ rac{\partial X}{\partial v} & rac{\partial Y}{\partial v} & 0 \end{bmatrix}$$