Homework 2

(Total 20 pts; Due Sept. 29 12pm)

Question 1. (5 pts) *Let S be given by $\sigma(u,v)=(u,v,uv)$, $(u,v)\in\mathbb{R}^2$. Calculate T_pS, its tangent plane at $p=(1,2,2)$.*

Question 2. (5 pts) *For the same S given by $\sigma(u,v)=(u,v,uv)$, $(u,v)\in\mathbb{R}^2$. Calculate $\mathcal{G}(1,2,2)$ where $\mathcal{G}$ is the Gauss Map.*

Question 3. (5 pts) *For the same S given by $\sigma(u,v)=(u,v,uv)$, $(u,v)\in\mathbb{R}^2$. Let $\mathcal{G}$ be the Gauss map. Calculate $D_{(1,2,2)}\mathcal{G}(1,1,3)$.*

Question 4. (5 pts) *Let $\sigma:\mathbb{R}^2\mapsto S$ be a surface patch that is also an isometry. Prove that σ_u and σ_v are perpendicular.*