Taller # 4

Seccion 3.3.5

2. Probar que $A_{ijk} B^{jknp}$ corresponde a un tensor mixto de orden 3.

$$A'_{i'j'k'} = \frac{\partial x^i}{\partial x'^{i'}} \frac{\partial x^j}{\partial x'^{j'}} \frac{\partial x^k}{\partial x'^{k'}} A_{ijk}$$

$$B'^{j'k'n'p'} = \frac{\partial x'^{j'}}{\partial x^j} \frac{\partial x'^{k'}}{\partial x^k} \frac{\partial x'^{n'}}{\partial x^n} \frac{\partial x'^{p'}}{\partial x^p} B^{jknp}$$

$$A'_{i'j'k'} B'^{j'k'n'p'} = \left(\frac{\partial x^i}{\partial x'^{i'}} \frac{\partial x^j}{\partial x'^{j'}} \frac{\partial x^k}{\partial x'^{k'}} A_{ijk}\right)\left(\frac{\partial x'^{j'}}{\partial x^j} \frac{\partial x'^{k'}}{\partial x^k} \frac{\partial x'^{n'}}{\partial x^n} \frac{\partial x'^{p'}}{\partial x^p} B^{jknp}\right)$$

$$A'_{i'j'k'} B'^{j'k'n'p'} = \frac{\partial x^{i}}{\partial x'^{i'}} \frac{\partial x'^{n'}}{\partial x^{n}} \frac{\partial x'^{p'}}{\partial x^{p}} A_{ijk} B^{jknp}$$

$$= \frac{\partial x^{i}}{\partial x'^{i'}} \frac{\partial x'^{n'}}{\partial x^{n}} \frac{\partial x'^{p'}}{\partial x^{p}} C_{i}^{\ np}$$

$$A_{ijk} B^{jknp} = C_{i}^{\ np}$$