Pontificia Universidad Católica del Perú Escuela de Posgrado
Doctorado en Matemáticas

Variedades Complejas
TAREA 5
2020-II

Indicaciones Generales:

- La TAREA 6 puede ser subida a la plataforma Paideia o enviada al correo electrónico jcuadros@pucp.edu.pe.

1. Let X be a complex manifold, show that

   a) The presheaf $\mathcal{O}_X$ of holomorphic functions on X is a sheaf.

   b) The presheaf of nowhere zero holomorphic functions $\mathcal{O}_X^\times$ is a sheaf.

   c) The presheaf of holomorphic m-forms is a sheaf.

   d) The presheaf of holomorphic vector fields on X is a sheaf.

2. Let Y be a complex submanifold of a complex manifold X, *the ideal sheaf $\mathcal{I}_Y \hookrightarrow \mathcal{O}_X$* corresponding to the subsheaf of $\mathcal{O}_X$ vanishing on Y, is a sheaf.

3. Let X be a complex manifold, show that

   a) The sheaf of holomorphic vector fields is locally free sheaf of $\mathcal{O}_X$-modules.

   b) The sheaf of holomorphic m-forms is locally free sheaf of $\mathcal{O}_X$-modules.