

In Problems 1-3 you may only give a canonical identification of fibers. You will get extra credit if you can say more.

1. 3-A
2. 3-B
3. 3-D
4. 3-E
5. 4-A (Hint: If $\xi : E \rightarrow B$ and $\eta : F \rightarrow C$, and p, q are projections from $B \times C$ to the first and second factors then $\xi \times \eta \simeq p^*\xi \oplus q^*\eta$.)

You may do the following problem for extra credit:

6. Any vector bundle over a contractible smooth manifold (or more generally any contractible paracompact topological space) is trivial. Use this to show that the only line bundles (up to isomorphism) over S^1 are (open) cylinder and Mobius band.