

Math 8062 Homework 10

Due Wednesday, 4/25/18

1. Do problem 23 on page 157 of Hatcher.
2. Do problem 29 on page 158 of Hatcher.
3. Let X be the same 3-manifold as in the previous problem (page 158, #29). Show that X has a non-vanishing vector field.
4. Let M and N be closed, connected, oriented manifolds of dimension n . Let $M\#N$ be their connected sum. Prove that

$$\tilde{H}_k(M\#N) \cong \tilde{H}_k(M) \oplus \tilde{H}_k(N),$$

for all $k \neq n$. *Hint: be careful when $k = n - 1$!*