Math 525 — Quiz 17 – November 29

Name:_____

Let V be a vector space of dimension 4 over $\mathbb{R}$ and let W be a vector space of dimension 3 over $\mathbb{R}$ and let $T\colon V \to W$ be a linear map of rank 2.

1. What are the dimensions of the vector spaces $\Lambda^3(V)$ and $\Lambda^3(W)$?

2. What is the rank of the linear map $\Lambda^3(T)\colon \Lambda^3(V) \to \Lambda^3(W)$?

3. What are the dimensions of the vector spaces $S^2(V)$ and $S^2(W)$?

4. What is the rank of the linear map $S^2(T)\colon S^2(V) \to S^2(W)$?