[13.39] Let V be an n-dimensional vector space. Let V be the vector space of -valent tensors on V, where V\* is the dual vector space of V. Show that a linear transformation *T* on V induces a linear transformation  on V where , the transpose of the inverse of *T*.

Proof. To show that T is linear, let *P* and *Q* be -valent tensors, ** a scalar, and *R* = *P* + *Q*. Then



and

