

1133-13-125

**Andrew R Kustin** and **Adela Vraciu\*** ([vraciu@math.sc.edu](mailto:vraciu@math.sc.edu)). *Examples of test modules.*

Let  $(R, m, k)$  be a local Noetherian ring. An  $R$ -module  $M$  is called a test module if  $\text{Tor}_i^R(M, N) = 0$  for all  $i \geq 1$  implies that  $N$  is free. The residue class field,  $k$ , is a well-known example of test module. We focus on the case when  $R$  is an Artinian quotient of a polynomial ring by equations of high degree, and give other examples of test modules. As an application, we describe a class of rings that do not admit non-free totally reflexive modules. (Received July 19, 2017)