Math 256B. Homework #9

Due Wednesday 28 April, online

1(nc). Hartshorne III Ex. 8.1.

2. Hartshorne III Ex. 8.4.
   For part (b), you may assume that Remark 7.1.1 is true for arbitrary commutative rings. For part (d), assume that $Y$ is a nonsingular variety.

3. Let $A$ be a ring. Show that $\text{Tor}^A_i(M, N) \cong \text{Tor}^A_i(N, M)$ for all $A$-modules $M$ and $N$, and for all $i \in \mathbb{N}$ (without looking it up anywhere). Use a spectral sequence.