

**Fall 2022, Math 621: Preliminary Problem Set 11**  
**Due: Thursday, April 14th, 2022**  
**Noetherian Rings and the Hilbert Basis Theorem**

**Preliminary problems.** These problems should be completed before discussion on Thursday.

(P1) Give a brief argument that  $\mathbb{Z}$  satisfies the ascending chain condition on ideals.