

MATH 793
SUMMER 2003
HOMEWORK 3

Due Friday July 25, 2003.

1. Let R be a Noetherian ring.
 - a) (5 pt) Show that $R[x]$ is Noetherian.
 - b) (5 pt) Show that $R[[x]]$ is Noetherian.

2. Let R be a domain.
 - a) (5 pt) Show that R is integrally closed if and only if $R[x]$ is integrally closed.
 - b) (5 pt) Show that R is completely integrally closed if and only if $R[x]$ is completely integrally closed.
 - c) (5 pt) Show that R is integrally closed if $R[[x]]$ is integrally closed (and give a counterexample to the converse).
 - d) (5 pt) Show that R is completely integrally closed if and only if $R[[x]]$ is completely integrally closed.