

KOMUTATIVNA ALGEBRA, 2019/20

10. DN/ 10nd HW : 13. 5. 2020

Rok za oddajo/ Deadline: 23:59, 19. 5. 2020

- (1) Pokaži, da je R' celosten nad R natanko tedaj, ko je $R'[x]$ celosten nad $R[x]$.
- (2) Naj bo R' razširitve R . Razširitev ima lastnost »gor grede« (Going Up), če zanjo velja zaključek »Gor grede« izreka.

Pokaži, da ima R' razširitve R lastnost »gor grede« natanko tedaj, ko je za vsak pra ideal $p' \triangleleft R'$ in $p = p' \cap R$ naravna preslikava $\text{Spec}(R'/p') \rightarrow \text{Spec}(R/p)$ surjektivna.

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- (1) Show that R' is integral over R if and only if $R'[x]$ is integral over $R[x]$.
 - (2) Let R' be an extension of R . The extension has the Going Up property if it satisfies the conclusion of the Going Up theorem.

Show that the extension R' of R has the Going Up property if and only if for all prime ideals $p' \triangleleft R'$ and $p = p' \cap R$ the natural map $\text{Spec}(R'/p') \rightarrow \text{Spec}(R/p)$ is surjective.