KOMUTATIVNA ALGEBRA, 2019/20
2. DN/ 2nd : 18. 3. 2020
Rok za oddajo/ Deadline: 23:59, 24. 3. 2020

(1) Ali sta $x^4+1, x^2-y-1 \in I$ za $I=(xy^2+2y^2, x^4-2x^2+1) \lhd \mathbb{Q}[x,y]$? Kaj pa v $\sqrt{I}$? Opiši kako si prišel do odgovora.

Izračunaj vse točke $V_{\mathbb{C}}(x^2+y^2-z, x^2+y+z^2, -x+y^2+z^2)$.

(2) Pokaži, da za vsak ideal $I \subsetneq R$ obstaja minimali praideal P nad I tj. praideal P, ki vsebuje I, in ne obstaja noben praideal Q za katerega velja $I \subset Q \subsetneq P$.

Poišči minimalne praideale nad $(x^2y, xy^2) \lhd \mathbb{Q}[x,y]$.

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(1) Are the $x^4+1, x^2-y-1 \in I$ for $I=(xy^2+2y^2, x^4-2x^2+1) \lhd \mathbb{Q}[x,y]$? What about in $\sqrt{I}$? Describe how did you get the answer?

Compute all the points of $V_{\mathbb{C}}(x^2+y^2-z, x^2+y+z^2, -x+y^2+z^2)$.

(2) Show that for every ideal $I \subsetneq R$, there exists a minimal prime ideal over I i.e. a prime ideal P containing I such that there is no prime ideal Q with $I \subset Q \subsetneq P$.

Find minimal prime ideal over $(x^2y, xy^2) \lhd \mathbb{Q}[x,y]$.