Problem (1) (a) Let $P = \{I \subsetneq R \mid I \text{ is an ideal of } R\}$ be the partially ordered set of proper ideals of R. Then $\mathfrak{m} \in P$ is called a maximal ideal if it is a maximal element of this partially ordered set.

Equivalently, this means that $R/\mathfrak{m}$ is a field.

(b)

(c)

(d)

Problem (2) (a)

(b)

(c)

(d)

(e)

Problem (3) (a)

(b)

(c)

(d)

(e)