A Book of Abstract Algebra | (2nd Edition)

Chapter 29, Problem 7EA

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Problem

Name an extension of $\mathbb{Q}$ over which π is algebraic of degree 3.

Step-by-step solution

Step 1 of 2

The objective is to name an extension of over which π is algebraic of degree 3.

Comment

Step 2 of 2

Now , π is algebraic over $\left(\pi^3\right)$ of degree 3.

It is not in $\left(\pi^3\right)$ as x is not a polynomial in x^3 but it is a zero of $x^3-\pi^3$ in $\left(\pi^3\right)[x]$.

Therefore ,the extension of over which π is algebraic of degree 3 is $\left(\pi^3\right)$.

Comment