A Book of Abstract Algebra | (2nd Edition)

Chapter 31, Problem 2EE

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Problem

$$\frac{x^n - 1}{x - 1} = x^{n-1} + x^{n-2} + \cdots + x + 1$$

This polynomial is irreducible if n is a prime (see Chapter 26, Exercise D3). Prove parts 1–3, where ω denotes a primitive nth root of unity.

If n is a prime, $[\mathbb{Q}(\omega): \mathbb{Q}] = n - 1$.

Step-by-step solution

There is no solution to this problem yet.

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