

MATH 5010 - SPRING 2023 (PROF. KINSER) - QUIZ 7

1. (3 points) Let F be a field, K an extension of F , and $p(x)$ a polynomial over F .

(i) State what it means for $p(x)$ to be *separable* over F .

(ii) State what it means for K to be *separable* (or *separably algebraic*) over F .

2. (2 points) For $n > 1$, state an equivalent expression for $x^n - 1 \in \mathbb{Z}[x]$ using either the n -th root of unity $\omega = e^{2\pi i/n}$, or using the cyclotomic polynomials $\Phi_k(x)$ (you do not need to write any precise cyclotomic polynomial and you are not limited to one).