Group Random Quiz 20B

1. List two possible splitting fields for $f(x) = x^2 + 1$ over $\mathbb{Q}$.

2. Let $a \in E$ be a zero of a polynomial $p(x)$ that is irreducible over $F$, where $E$ is an extension field of $F$.
   Similarly, let $b \in E' \setminus F$ be a zero of $p(x)$, where $E'$ is an extension field of $F$.
   Define an isomorphism $\phi : F(a) \rightarrow F(b)$.

3. (True/False) If $E, E'$ are each splitting fields of $f(x)$ over $F$, then $E, E'$ are isomorphic fields.