Turn in #7

(1) Let E be an extension field of F and let $\alpha \in E$ be algebraic of odd degree over F (i.e. $[F(\alpha) : F]$ is odd).

Show that α^2 is also algebraic over F and that $F(\alpha) = F(\alpha^2)$.

[5 points]

(2) Find the minimal polynomial $p(x)$ for $\alpha = \sqrt{3 - \sqrt{6}}$ over $\mathbb{Q}$ and prove that it *is* irreducible.

Is $\mathbb{Q}(\alpha)$ a splitting field for $p(x)$? Explain.

[15 points]