1. Let K be a splitting field of the polynomial $f(x) = (x - \alpha_1) \cdots (x - \alpha_n) \in F[x]$. Let $\delta = \prod_{i<j}(\alpha_i - \alpha_j)$ be a square root of the discriminant of $f(x)$.

   Show that if $G(K/F) = S_n$, then $G(K/F(\delta)) = A_n$.

2. What do you think a submodule is? Or a homomorphism of R-modules?

Check this box if you would like feedback ☐