Here are a few more review exercises:

1. Let λ be a Young diagram with $\leq k$ rows, and let s_λ be the corresponding Schur function in the variables $x_1, \ldots x_k$. Write the symmetric polynomial $s_\lambda s_{[1]}$ as a linear combination of Schur functions. Hint: Write $s_{[1]}$ as an explicit polynomial.

2. A little check of some basic facts:

(a) What is the dimension of $\mathbf{C}S_n p_\lambda$? Of $\mathbf{C}S_n q_\lambda$?

(b) What is $(p_\lambda)^2$? What is $(q_\lambda)^2$?

3. Let $H \subset G$ be finite groups and let V be an irreducible G-module. What is the multiplicity of V in $Ind(Res\ V)$?

4. Let L be a minimal leftideal of the algebra A, and let $b \in L$. How many eigenvalues does the lineag map ρ_b have? Here $\rho_b : L \to L$, $\rho_b(a) = ab$ for all $a \in L$.