1.) Problem 1.1 from Srednicki

2.) A Lorentz transformation obeys the condition

\[ g_{\mu \nu} \Lambda^{\mu}_{\rho} \Lambda^{\nu}_{\sigma} = g_{\rho \sigma}. \]

Show that if \( \Lambda_1 \) and \( \Lambda_2 \) obey the condition, then \( \Lambda_3^{\mu}_{\nu} = \Lambda_2^{\mu}_{\alpha} \Lambda_1^{\alpha}_{\nu} \) obeys the condition. That is, show that the product of two Lorentz transformations is a Lorentz transformation.

3.) Problem 2.4 from Srednicki

4.) Problem 2.5 from Srednicki

5.) Problem 2.9 from Srednicki. The hint for part (b) involves a clever extension of something in problem 2.8, but since that is not assigned, it is probably most easy for you to straightforwardly do the calculation starting with Eq. (2.33).