Homework Assignment 3 due Friday February 6.

9.

a. Evaluate Equation (7.8) for the free Green's function, (7.44).

b. Do the same for Equation (7.10).

10.

a. Evaluate the integral J_1 , where:

1) ε, η, and ω_0 are real;
2) f(ω) is analytic;
3) and ε, η□ 0.

b. Evaluate the integral J_2 for the same conditions as a

$$J_1 = \int_{-\infty}^{\infty} \frac{d\omega\ e^{-i\epsilon\omega} f(\omega)}{\omega - \omega_0 + i\eta}$$

$$J_2 = \int_{-\infty}^{\infty} \frac{d\omega\ e^{-i\epsilon\omega} f(\omega)}{(\omega - \omega_0 + i\eta)^2}$$

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