

Special Problem 3.H-5

A low-pass filter has the scattering parameter:

$$S_{21}(\omega) = e^{j0.1(-\omega^3 - 15\omega)} \left(\frac{100}{100 + \omega^2} \right)^{1/2}$$

Determine:

1. The **delay** of a signal propagating through this filter, if operating at frequency $\omega = 5$.
2. The **cutoff frequency** of this filter.