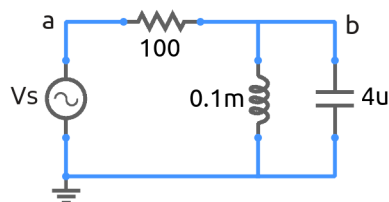


ee101_rlc_3.sqproj



Shown in the figure is a passive band-pass filter.

Exercise Set

1. Derive the transfer function $H(s) = V_b(s)/V_a(s)$.
2. Verify that $\frac{d|H|}{d\omega}$ is zero at $\omega = \frac{1}{\sqrt{LC}}$.
3. Simulate the circuit, plot $|H(j\omega)|$ versus frequency (log-log plot), and verify that the $|H|$ is maximum at $\omega = \frac{1}{\sqrt{LC}}$.
4. What is the phase of $H(j\omega)$ as $\omega \rightarrow 0$ and as $\omega \rightarrow \infty$? Check your answers against simulation results.