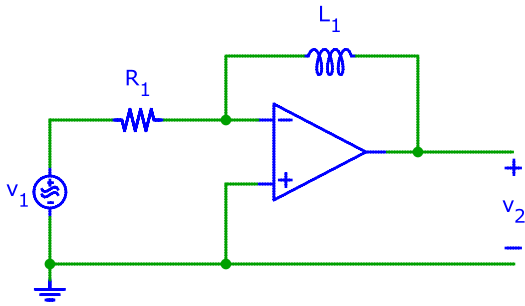


1. (D-107) Derive an expression for $H(s) = V_2(s)/V_1(s)$ and draw the Bode plot (magnitude and phase) of $H(s)$ for $\tau = L_1/R_1 = 1 \mu s$. What is the unity-gain frequency? Assume that the operation amplifier is ideal.



2. A dual shaft motor with 1:80 reduction gearing has a quadrature encoder with 16 magnetic zones attached to its shaft (before the reduction gearing). Calculate the counts per meter displacement detected by a quadrature decoder if the motor drives a robot with 100mm diameter wheels.