

14FE-2 If all initial conditions are zero in the network in Fig. 14PFE-2, find the transfer function $V_o(s)/V_s(s)$, and determine the type of damping exhibited by the network.

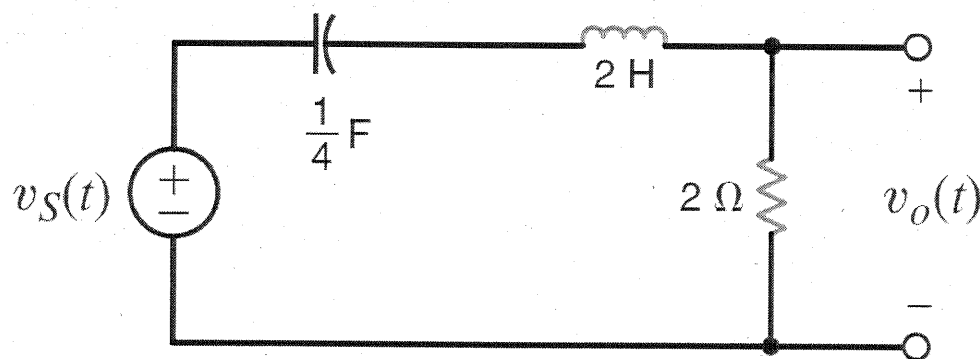


Figure 14PFE-2

SOLUTION:

$$\frac{V_o(s)}{V_s(s)} = \frac{2}{2 + 2s + 4/s} = \frac{2s}{2s^2 + 2s + 4} = \frac{s}{s^2 + s + 2}$$

$$\boxed{\frac{V_o}{V_s} = \frac{s}{s^2 + s + 2}}$$

Poles at $s = -\frac{1}{2} \pm j \frac{\sqrt{7}}{2}$

Since poles are complex,
the circuit is underdamped