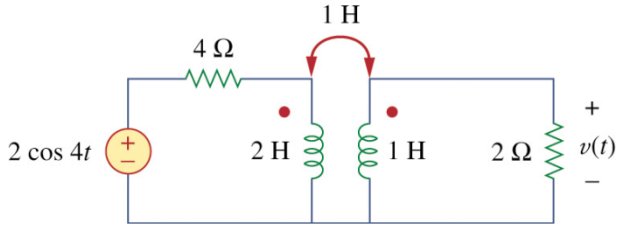
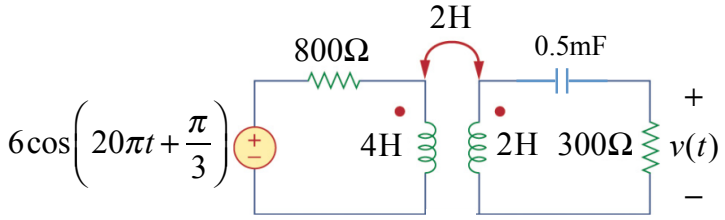
This is the last homework assignment. Some of the content will require the lectures of December 4.

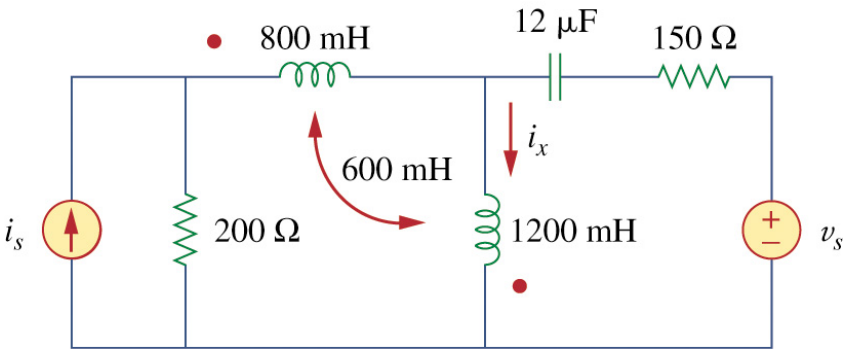
1:
Find $v(t)$ for the circuit below.



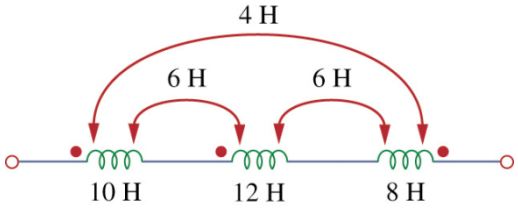
2:
Solve for $v(t)$ in the circuit below



3: Use mesh analysis to find i_x in the following circuit, when $i_s = 4\cos(600t)$, $v_s = 110\cos(600t + 30°)$ *Hint: Source transformation of the current source, after which the mesh current flows through both 800 mH and 1200 mH, inducing mutual inductance from each!*



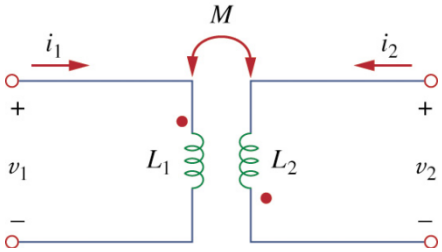
4: Determine the inductance of the three series-connected inductors shown below.



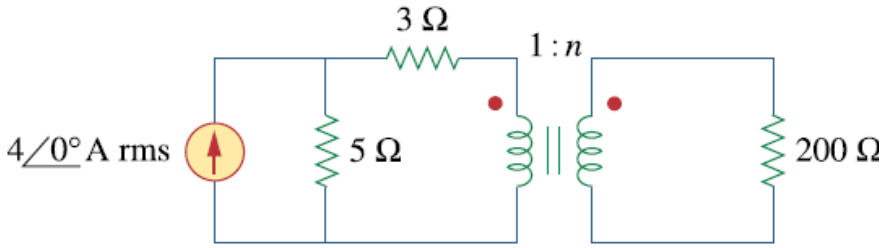
5:

The coils shown below have $L_1 = 40\text{mH}, L_2 = 5\text{mH},$ and $k = 0.6$. (Pay attention to the defined direction of the currents!) Find $i_1(t), v_2(t)$ given that

$v_1(t) = 10\cos\omega t, i_2(t) = 2\sin\omega t, \omega = 2000$ rad/sec

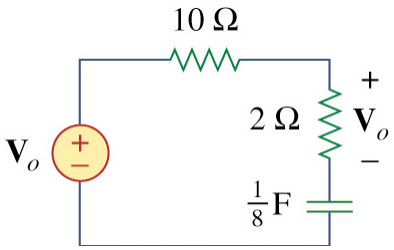


6: Find n for the maximum power supplied to the 200 ohm load. Then determine the power to the 200 ohm load if n=10.



7:

Obtain the transfer function $\mathbf{H}(\omega) = \dfrac{\mathbf{V}_o}{\mathbf{V}_i}$ of the following circuit. **Note** that there is a "typo" in the circuit figure, and the voltage source should be labeled $\mathbf{V}_i$.


10 Ω
2 Ω
+
$\mathbf{V}_o$
−
$\mathbf{V}_o$
+
−
$\frac{1}{8}$F