good luck

Maximum Power Transfer

Occurs when $R_{th} = R_L$: $P_{L\max} = \dfrac{V_s^2}{4R_L}$

Inductors

$$V_L(t) = L\frac{di_L(t)}{dt} = L \cdot i_L'(t) \qquad i_L(t) = \frac{1}{L}\int_{-\infty}^{t} V_L(t)dt = i_L(t_0) + \frac{1}{L}\int_{t_0}^{t} V_L(t)dt \qquad W_L(t) = \frac{L}{2}i_L^2(t)$$

Capacitors

$$i_c(t) = C\frac{dV_c(t)}{dt} = CV_c'(t) \qquad V_c(t) = \frac{1}{C}\int_{-\infty}^{t} i_c(t)dt = V_c(t_0) + \frac{1}{C}\int_{t_0}^{t} i_c(t)dt \qquad W_C(t) = \frac{C}{2}V_C^2(t)$$

First Order Circuits

$$x(t) = x(\infty) + [x(0) - x(\infty)]e^{\frac{t-t_0}{-\tau}}$$

Second Order Circuits

$$\omega = \frac{1}{\sqrt{LC}}$$