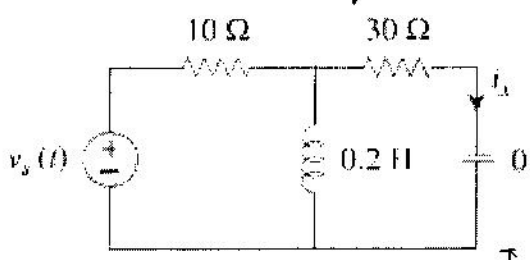
電路學

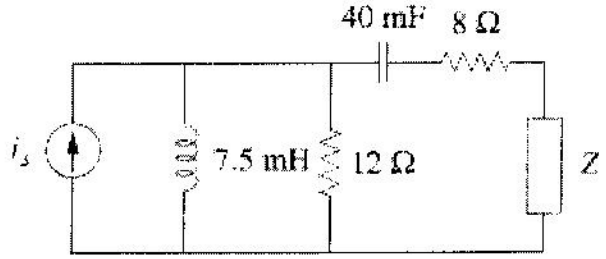
第三次小考

Nov 26

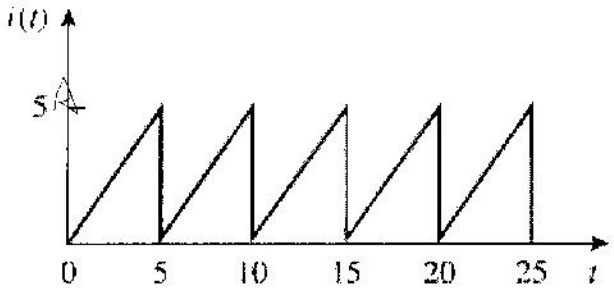
1. (25%) Given that $v_s(t) = 20\sin(100t - 40°)$ in the figure below, determine $i_x(t)$.



2. (25%) It is desired to transfer maximum power to the load **Z** in the circuit below. Find **Z** and the maximum power. Let $i_s = 5\cos 40t$ A



3. (20%) Calculate the rms value of the current waveform



4. (30%) Two loads are connected in parallel with a 2000 V source. The individual power factors and currents are:

   Pf_1=0.5 lagging $|\underline{I}_1|$=40A

   Pf_2=0.8 leading $|\underline{I}_2|$=15A

   (a) Find the total power and current from the source, and calculate the power factor of the combined loads.

   (b) A capacitor is now added in parallel, increasing the power factor to 0.95 lagging. Find the current drawn from the source and the capacitor's reactive power.