## K ing F ahd U niversity of $P$ etroleum and M inerals

Electrical Engineering Department
EE 208: Electrical Systems
Instructor: EImar Ml. Yohar

## Home MYORlx $\neq 4$

1. The current across a $0.5 H$ inductor is given by:

$$
i_{s}=\left\{\begin{array}{lc}
0 & t<-1 \& t \geq 1 \\
1-t^{2} & -1 \leq t<1
\end{array}\right.
$$

Find: $i_{L}(t), p(t), w_{L}(t)$ and plot them.
2. For the circuit shown, if the voltage $v_{s}(t)=3 e^{-5 t}[V]$ for $t \geq 0$,
a. find $i_{c}(t)$ for $t \geq 0$.
b. find the energy stored in the capacitor for $t \geq 0$.

3. The voltage across the capacitor in the circuit below is given by:

$$
v_{c}(t)=\left\{\begin{array}{c}
0, \quad t \leq 0 \\
3 t, 5 \geq t>0 \\
-3 t+30,5 \leq t>10 \\
0, \quad t>10
\end{array}\right.
$$

Find: $i_{c}(t), v_{s}(t)$ and $w_{c}(t)$

4. For the circuit shown, calculate the unknown quantities.

5. If the value of $\mathbf{L}$ is equal to the equivalent inductance at terminals a $\& \mathrm{~b}$, find the equivalent inductance.

6. In the circuit shown below, what value of $\boldsymbol{R}$ will make the energy stored in the inductor and the capacitor equal?


