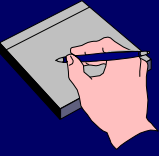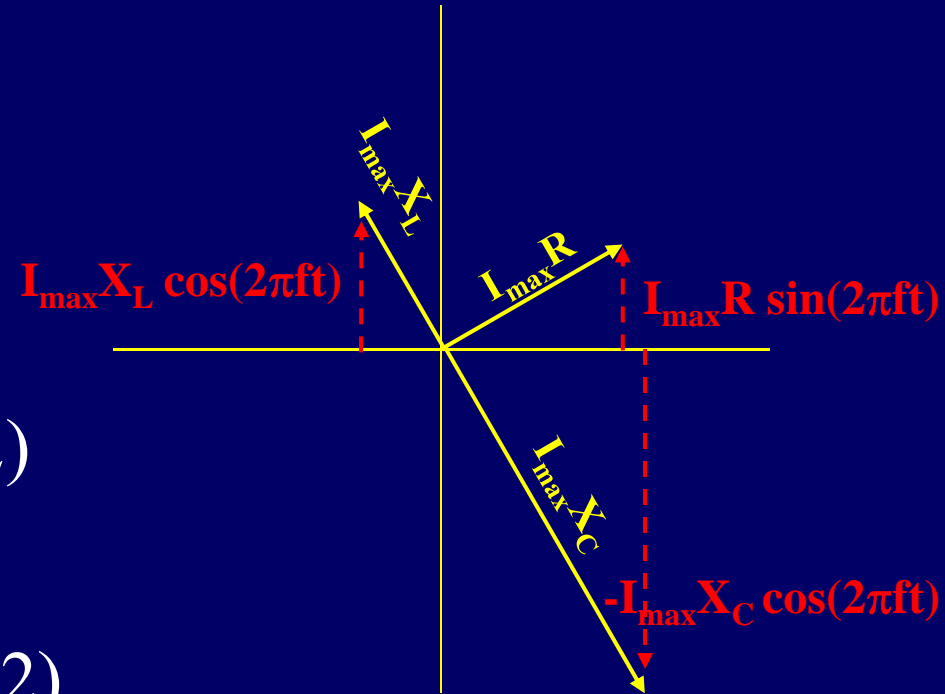# Phasor Diagrams

Instantaneous Values:

- $I = I_{max}\sin(2\pi ft)$
- $V_R = I_{max}R \sin(2\pi ft)$

- $V_C = I_{max}X_C \sin(2\pi ft - \pi/2)$
  $= -I_{max}X_C \cos(2\pi ft)$

- $V_L = I_{max}X_L \sin(2\pi ft + \pi/2)$
  $= I_{max}X_L \cos(2\pi ft)$

$I_{max}X_L$

$I_{max}X_L \cos(2\pi ft)$

$I_{max}R$

$I_{max}R \sin(2\pi ft)$

$I_{max}X_C$

$-I_{max}X_C \cos(2\pi ft)$

Voltage across resistor is always in phase with current!

Voltage across capacitor always lags current!

Voltage across inductor always leads current!