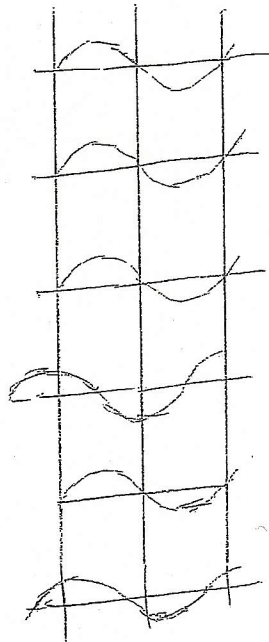
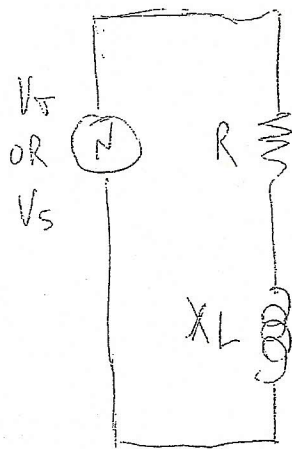


## LECTURE NOTES

## CHAPTER 12



$I_R$   
CURRENT  
AND  
VOLTAGE  
IN PHASE

$I_L$   
VOLTAGE  
LEADS  
CURRENT  
 $V_L$

$I_T$   
 $V_S$

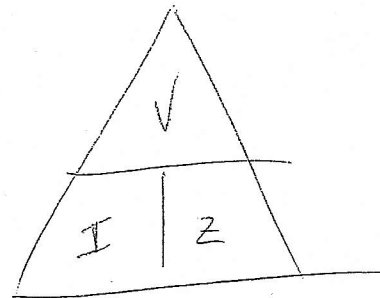
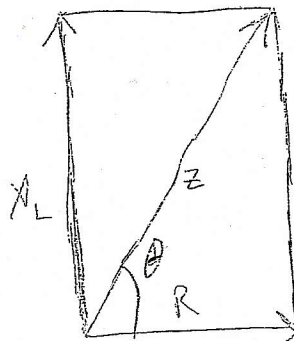
ELI THE ICE MAN

$$Z = \sqrt{R^2 + X_L^2}$$

$$X_L = 2\pi fL$$

$$\theta = \tan^{-1}\left(\frac{X_L}{R}\right)$$

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$$V_S = \sqrt{V_R^2 + V_L^2}$$

$$\theta = \tan^{-1}\left(\frac{V_L}{V_R}\right)$$

WHAT HAPPENS IF  $f$  CHANGES?

$f \uparrow$	$X_L \uparrow$	$R_{\text{SAME}}$	$Z_T \uparrow$	$I_T \downarrow$	$\theta \uparrow$
$f \downarrow$	$X_L \downarrow$	$R_{\text{SAME}}$	$Z_T \downarrow$	$I_T \uparrow$	$\theta \downarrow$

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