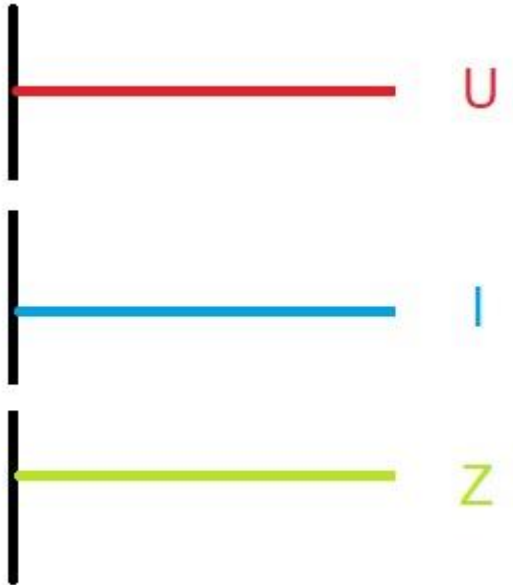


## Zo is het 02 ...>>> VECTOREN

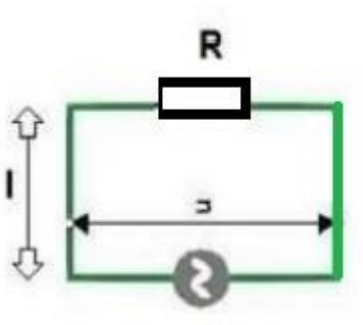
### LEICIER

**L** spoel  
**E** EMK (U)  
**I** stroom  
**C** condensator  
**I** stroom  
**E** EMK (U)  
**R** weerstand

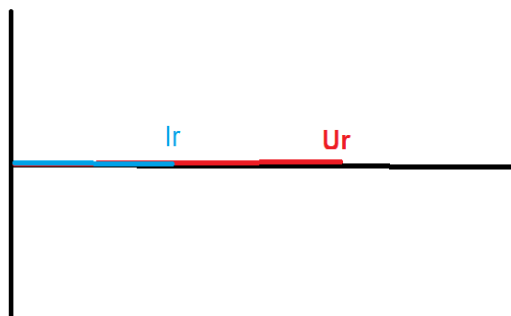
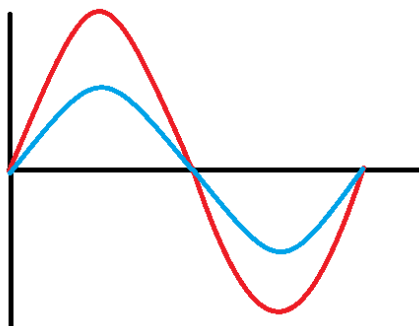


## Zo is het 02 ...>>> VECTOREN

Bij een weerstand  
LEICIE**R**



Er is **GEEN** fasevershil tussen de spanning U en de stroom I



## Zo is het 02 ...>>> VECTOREN

Bij een condensator

LEI **CIE**R

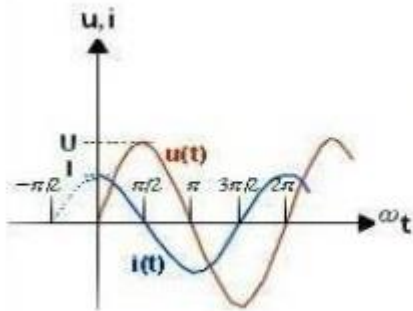
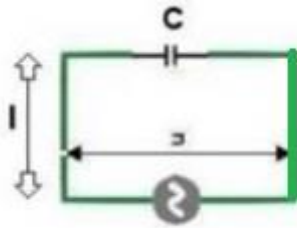
C condensator

I stroom

E EMK (U)

De stroom I loopt  $90^\circ$  **VOOR** op de spanning U {ijlt voor}

De spanning U loopt  $90^\circ$  **NA** op de stroom I {ijlt na}



## Zo is het 02 ...>>> VECTOREN

Bij een spoel

**LEI**CIER

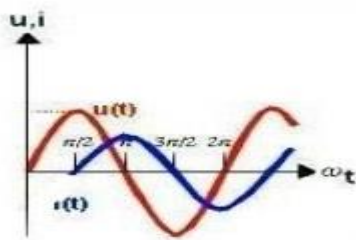
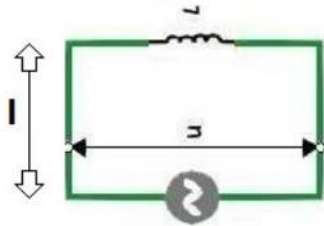
L spoel

E EMK (U)

I stroom

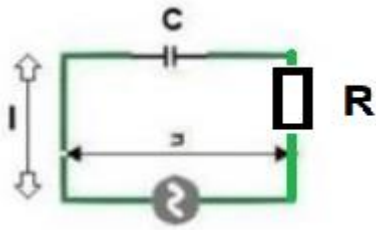
De spanning U loopt  $90^\circ$  **VOOR** op de stroom I {ijlt voor}

De stroom I loopt  $90^\circ$  **NA** op de spanning U {ijlt na}



## Zo is het 02 ...>>> VECTOREN

RC-combinatie serie



Ook hier LEI**CIER**

$$X_c = 100 \, \Omega$$

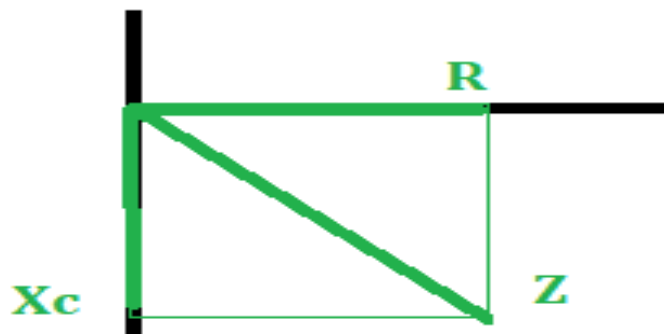
$$R = 75 \, \Omega$$

$$U_a = 250 \, \text{V}$$

$$Z = \sqrt{R^2 + X^2} \, \text{Ohm}$$

$$Z = \sqrt{75^2 + 100^2} = 125 \, \Omega$$

We gaan de impedantie tekenen



$$I = U / Z$$

$$I = 250 / 125 = 2 \text{ A}$$

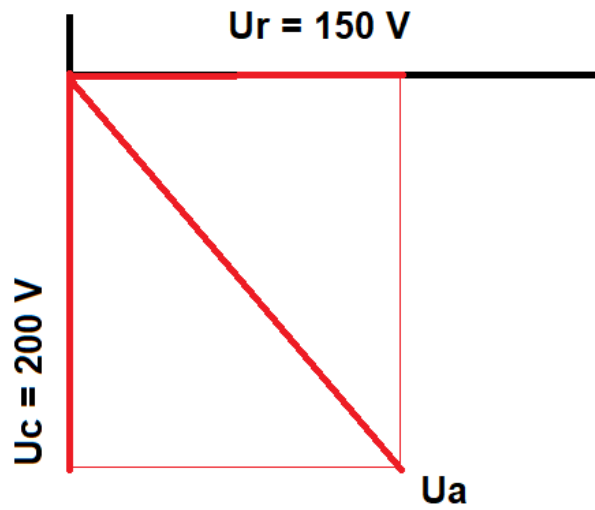
$$U_r = I \times R \quad 2 \times 75 = 150 \, \text{V}$$

$$U_c = I \times X_c \quad 2 \times 100 = 200 \, \text{V}$$

**NOOIT OPTELLEN** fcsverschil bij de C

## Zo is het 02 ...>>> VECTOREN

We gaan de spanningen tekenen



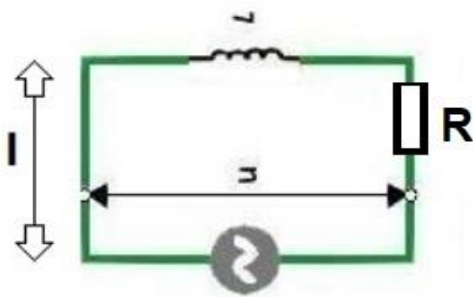
$$U_a^2 = U_r^2 + U_c^2$$

$$U_a = \sqrt{U_r^2 + U_c^2}$$

$$U_a = \sqrt{150^2 + 200^2} = 250 \text{ V}$$

## Zo is het 02 ...>>> VECTOREN

RL-combinatie serie



Ook hier **LEICIER**

$$X_L = 40 \, \Omega$$

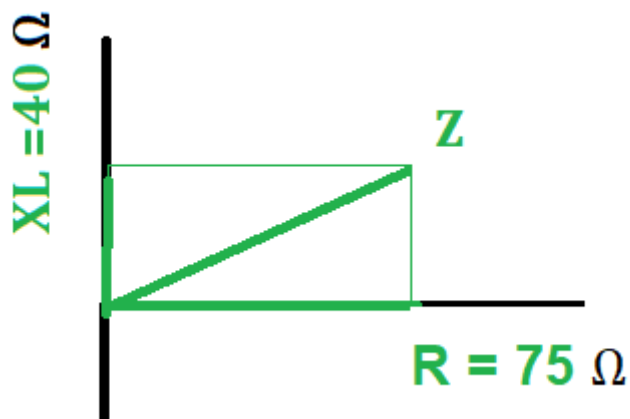
$$R = 75 \, \Omega$$

$$U_a = 250 \, \text{V}$$

$$Z = \sqrt{R^2 + X^2} \, \text{Ohm}$$

$$Z = \sqrt{75^2 + 40^2} = 85 \, \Omega$$

We gaan de impedantie tekenen



$$I = U / Z$$

$$I = 250 / 85 = 2.94 \, \text{A}$$

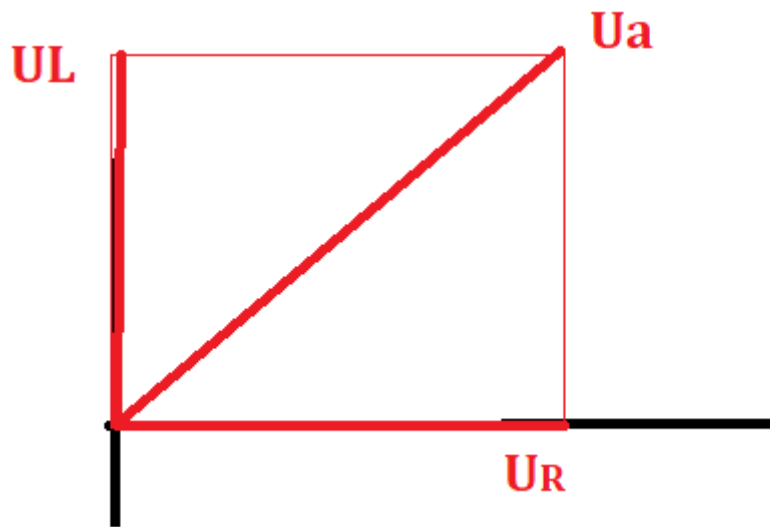
$$U_R = I \times R \quad 2.94 \times 75 = 220.5 \, \text{V}$$

$$U_L = I \times X_L \quad 2.94 \times 100 = 117.6 \, \text{V}$$

**NOOIT OPTELLEN** faseverschil bij de L

## Zo is het 02 ...>>> VECTOREN

We gaan de spanningen tekenen



$$U_a^2 = U_R^2 + U_L^2$$

$$U_a = \sqrt{U_R^2 + U_L^2}$$

$$U_a = \sqrt{220.5^2 + 117.6^2} = 249.9 \text{ V} \approx 250 \text{ V}$$

$$U_R = I \times R \quad 2.94 \times 75 = 220.5 \text{ V}$$

$$U_L = I \times X_L \quad 2.94 \times 100 = 117.6 \text{ V}$$