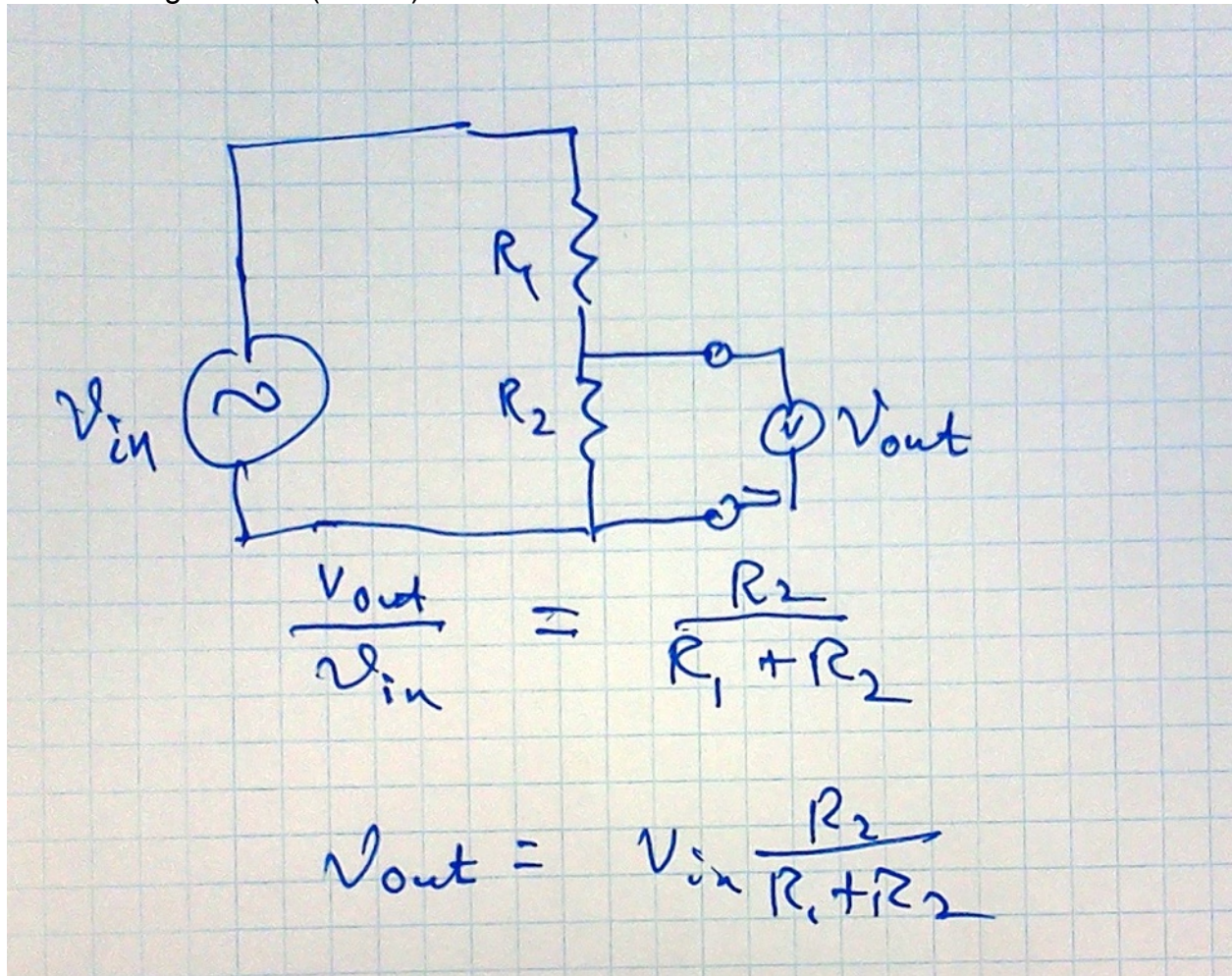
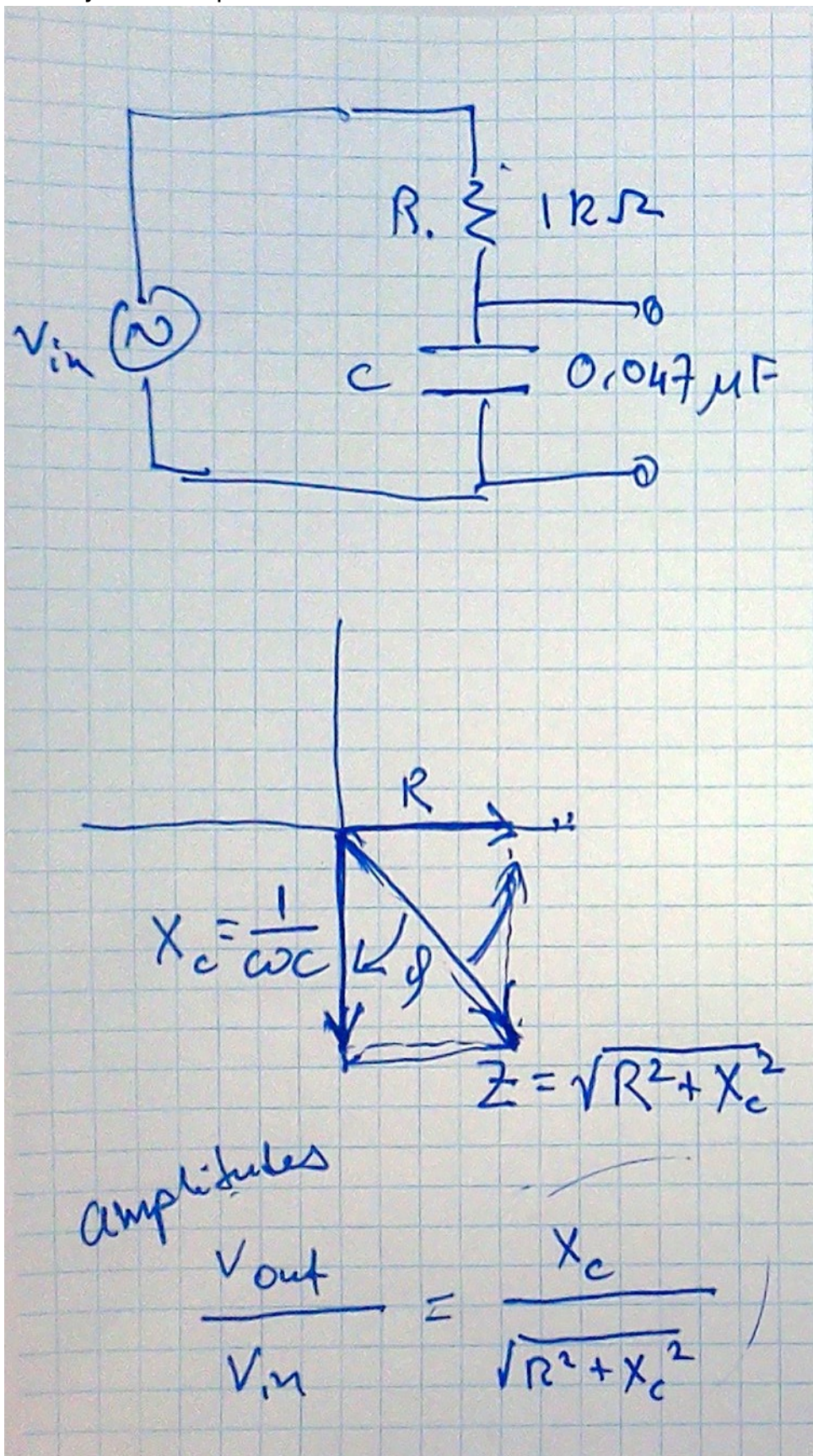


## Example: RC Low-pass filter

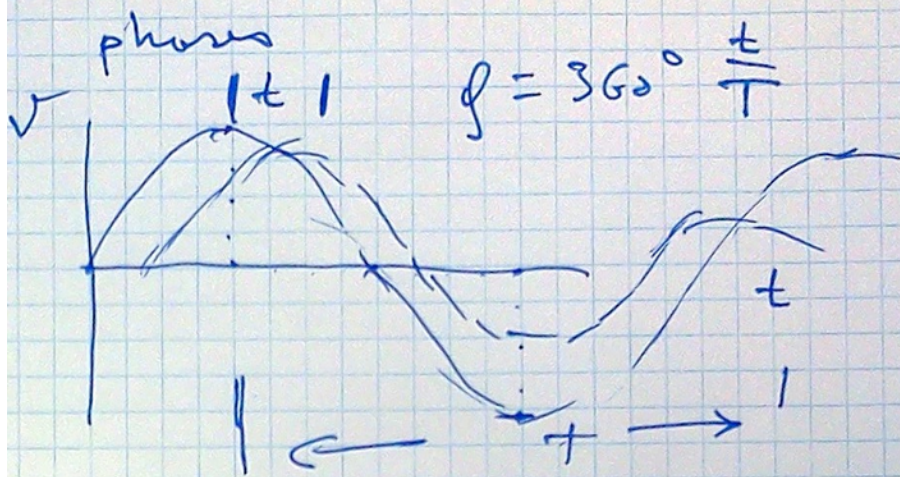
### 1. DC Voltage divider (review)



## 2. Phasor Analysis of low pass filter







$$\phi = \tan^{-1} \frac{R}{X_C} = \tan^{-1}(R\omega C)$$

$$R = 1000 \Omega$$

$$\omega = 2\pi f = 2\pi(1\text{kHz})$$

$$X_C = \frac{1}{\omega C} = 3388 \Omega$$

$$= 6280 \frac{\text{rad}}{\text{s}}$$

$$\text{attenuation} = \frac{\cancel{3388} X_C}{\sqrt{X_C^2 + R^2}}$$

$$= \frac{3388 R}{\sqrt{3388^2 + 1000^2}}$$

$$= 0.96$$

$$\tan^{-1} = 16^\circ = \arctan\left(\frac{1000}{3388}\right)$$