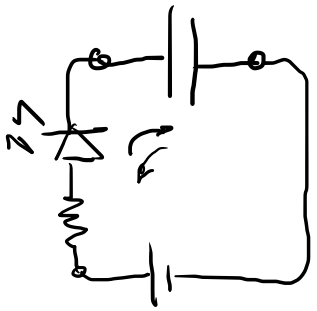
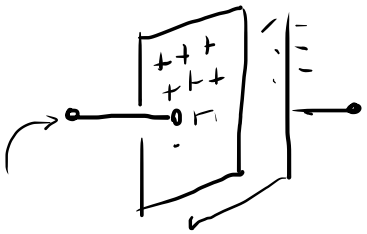
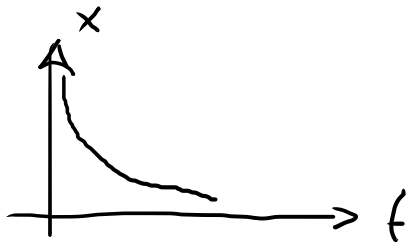






F ~ μF nF pF

$Q = C \cdot V$

$i = \frac{\Delta Q}{\Delta t} \rightsquigarrow i = \frac{dq}{dt}$

$\frac{d}{dt} Q = \frac{d}{dt}(C \cdot V) \rightsquigarrow \frac{dQ}{dt} = C \frac{dV}{dt} = i$

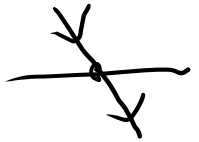
$2\pi f$

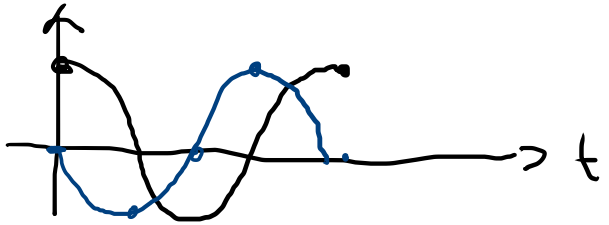
$v(t) = V \cdot \cos(\omega t + \varphi)$ $\quad i(t) = C \frac{d}{dt}\left[V \cdot \cos(\omega t + \varphi)\right] =$

$i(t) = CV \frac{d}{dt}\left[\cos(\omega t + \varphi)\right]$

$\downarrow$

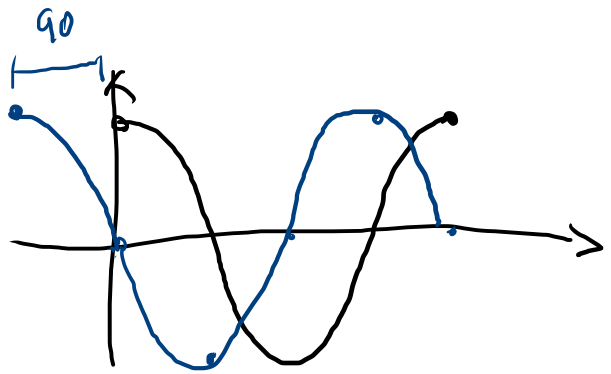
$-\sin(-)$





$$i(t) = -C \cdot V \cdot \omega \operatorname{Sen}(\omega t + \varphi)$$

$\cos(x)$ ↓ $-\operatorname{Sen}(x)$



$$\bar{I} = C\omega \left[-V \operatorname{Sen}(-)\right]$$

$\cos(3x)$ ↓ $-3\operatorname{Sen}(3x)$

$$\bar{I} = C\omega \bar{V}$$

$$\bar{I} = \frac{1}{\frac{1}{C\omega}} \cdot \bar{V} \sim \bar{I} = \frac{V}{R}$$

$\frac{1}{C\omega} \rightarrow X_C$

$$X_C = \frac{1}{C\omega} = \frac{1}{2\pi f C}$$

100nF @ 50Hz

10^{-3} 10^{-6} 10^{-9}

$$X_c = \frac{1}{\omega C} = \frac{1}{2\pi f \cdot C} = \frac{1}{2\pi \cdot 50 \cdot 100 \cdot 10^{-9}} =$$

$$= \frac{10^9}{100\,\pi \cdot 100} = \frac{10^9}{\pi \cdot 10^4} = \frac{10^5}{\pi} = \frac{100600}{\pi} \simeq 31{,}8\,k\Omega$$

($100 \to 10^2$, $100 \to 10^2$)