21차시 강의
회로 이론

유니스터디 박효철 강사

CONTENTS

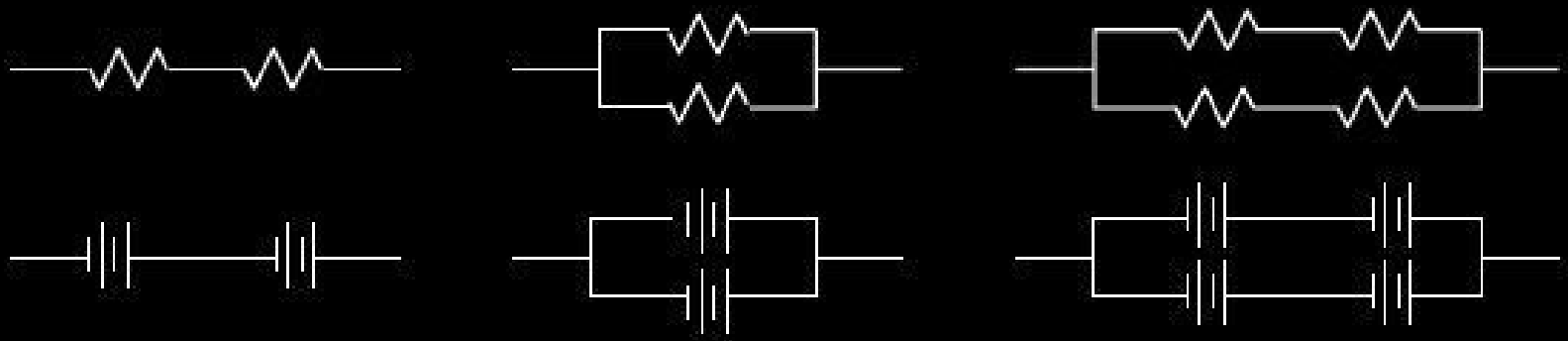
First 저항, 축전기의 연결

Second 자체 유도? RL회로? LC회로? RLC회로?

Third 키르히호프 법칙과 휘트스톤 브릿지

직렬, 병렬?

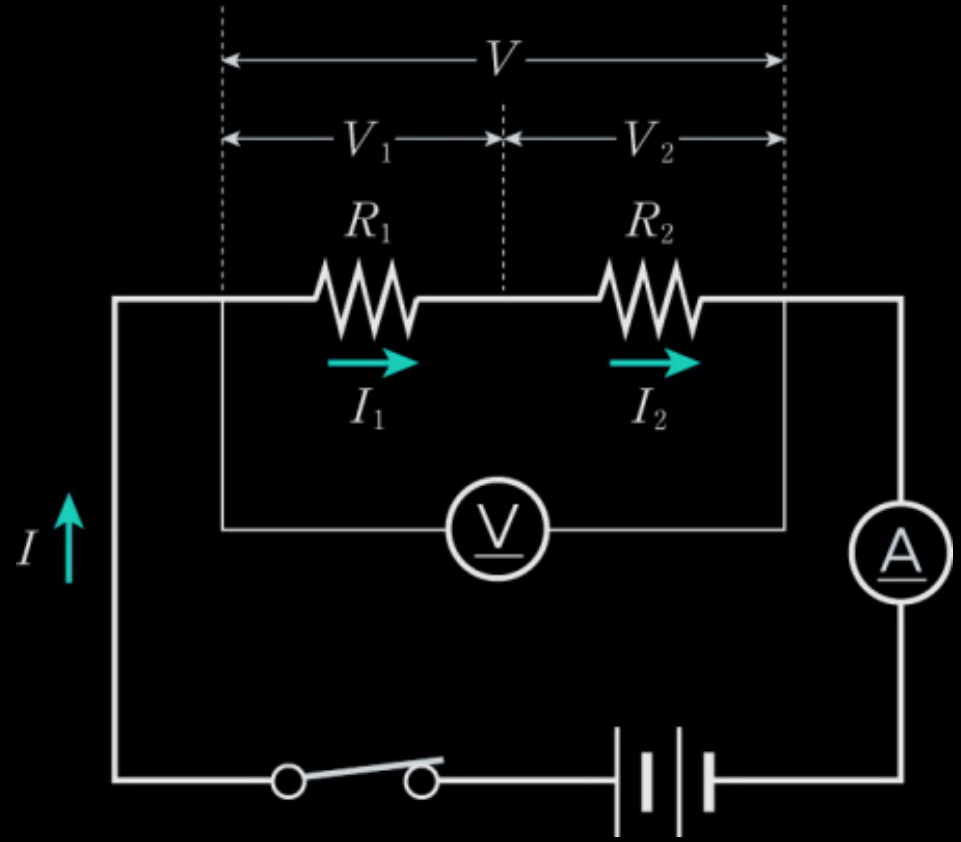
뜻?



직렬 병렬 직병렬

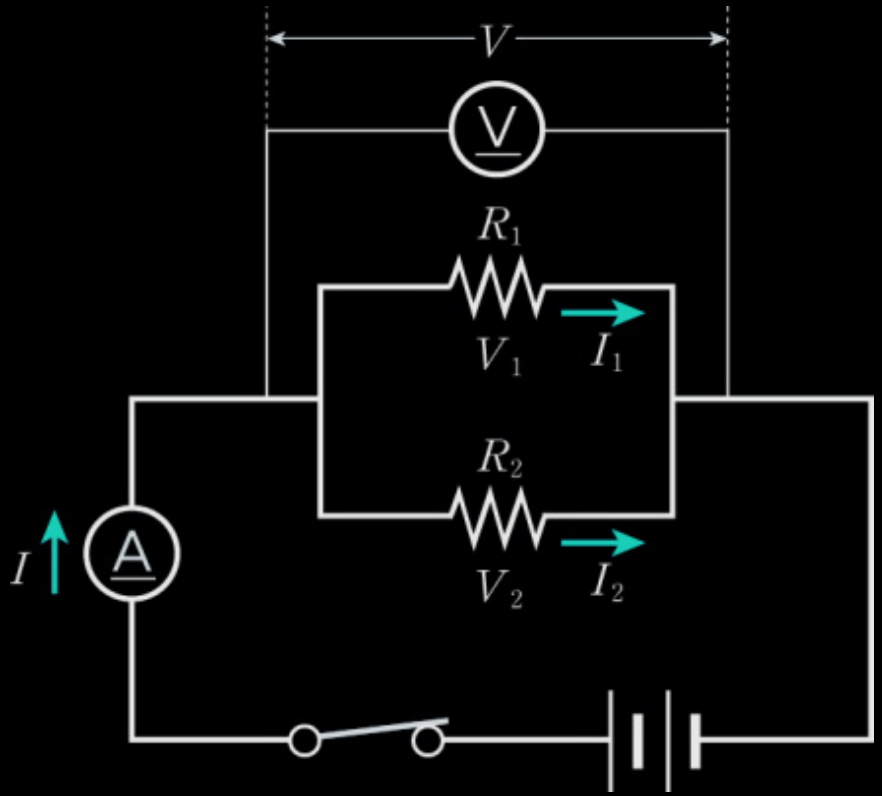
저항과 축전기의 연결

저항의 직렬 연결



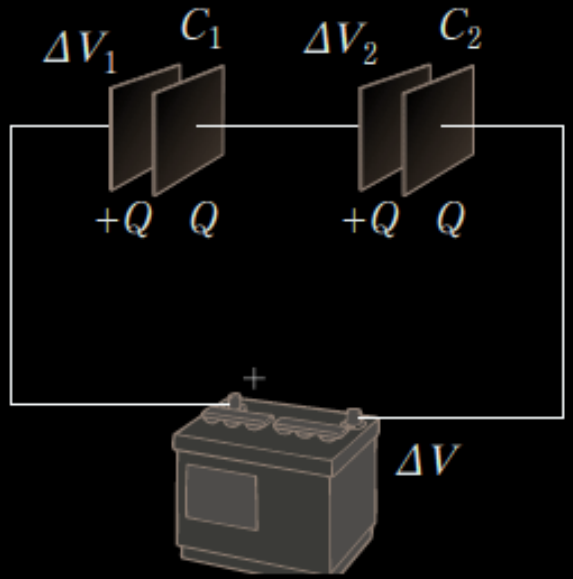
이미지 출처 : 윤제한의 물리교실

저항의 병렬 연결

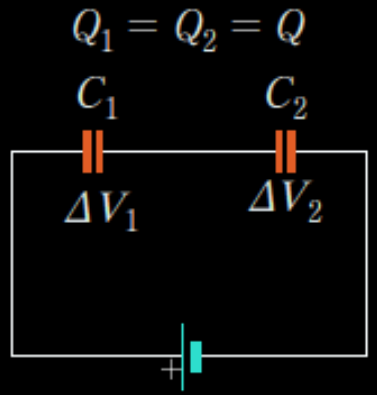


이미지 출처 : 윤제한의 물리교실

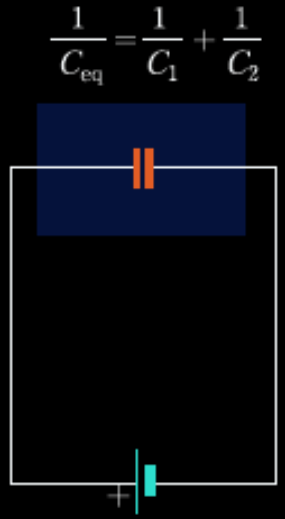
축전기의 직렬 연결



(a)



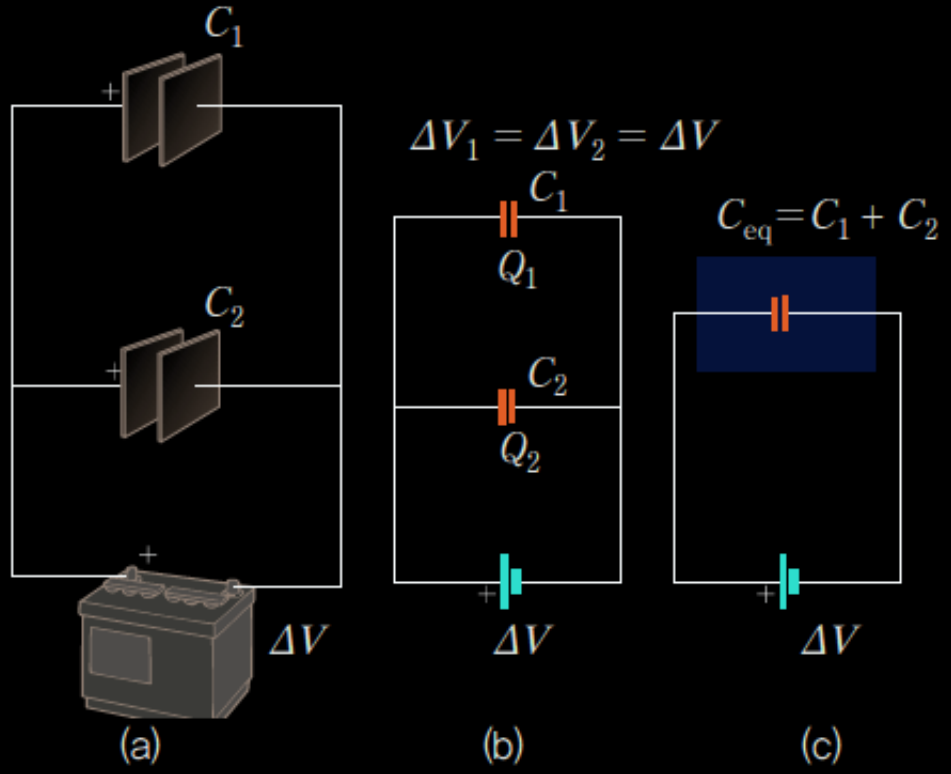
(b)



(c)

이미지 출처 : 윤제한의 물리교실

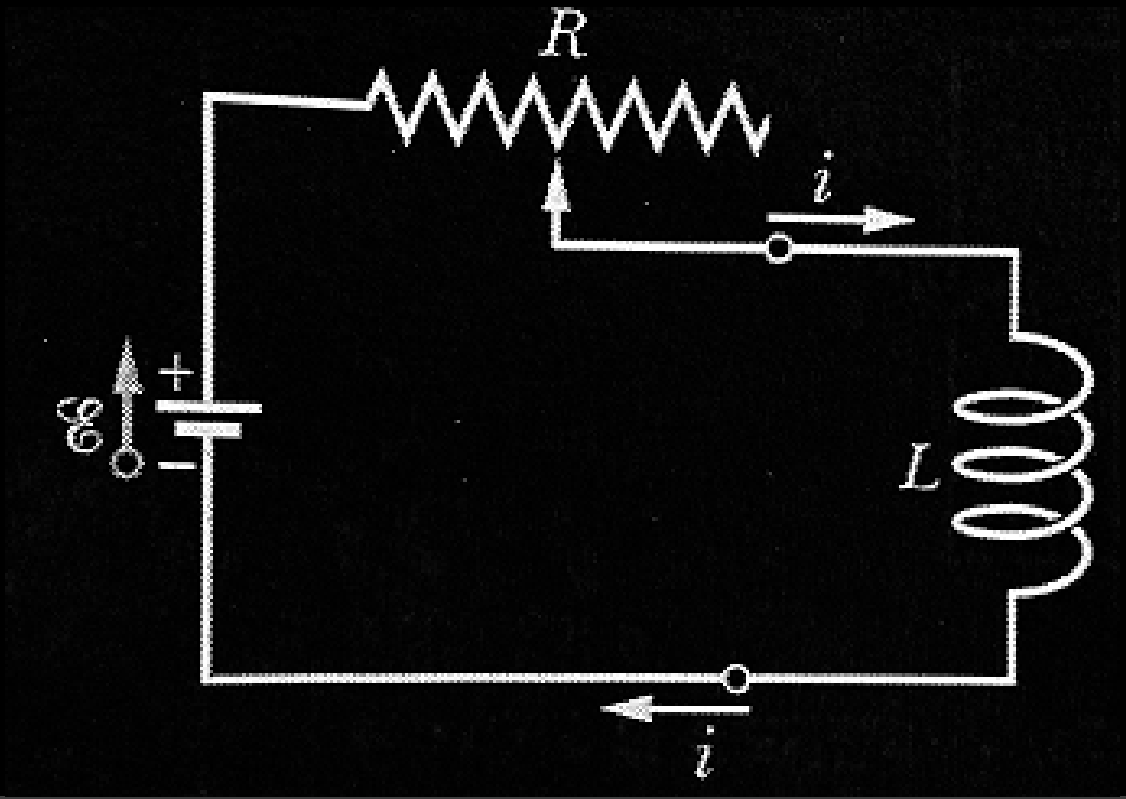
축전기의 병렬 연결



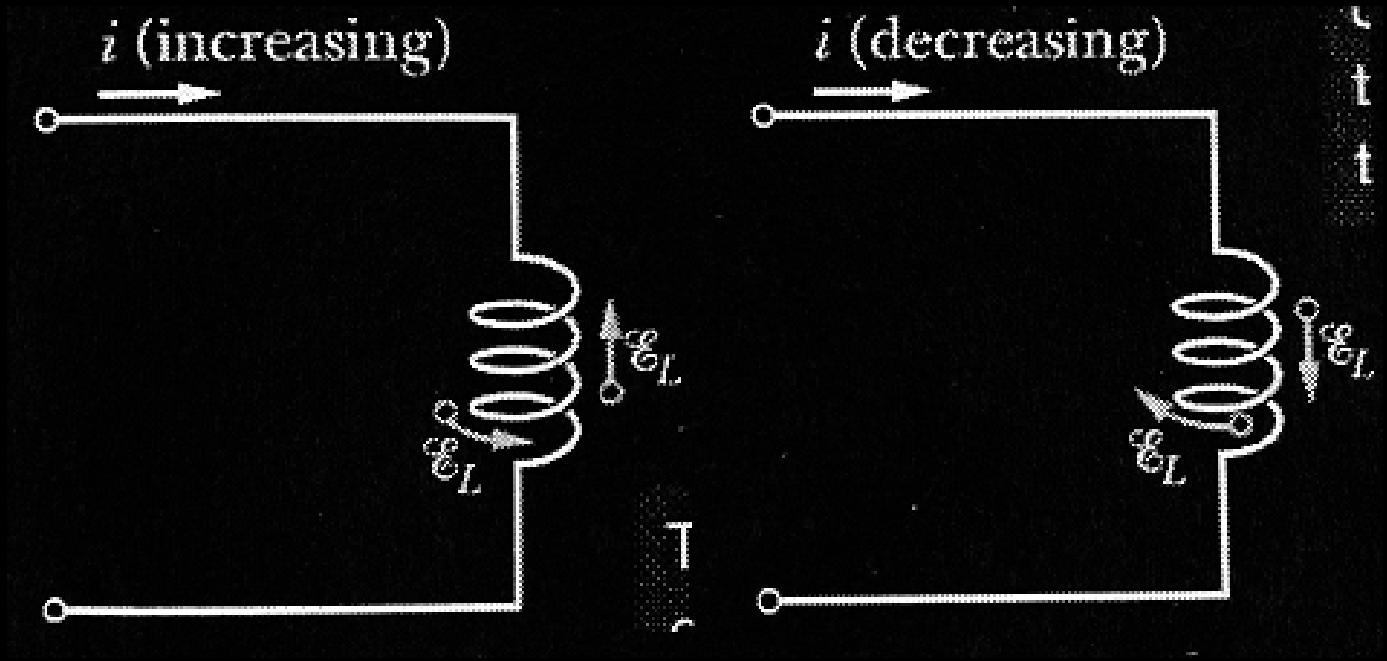
이미지 출처 : 윤제한의 물리교실

코일?

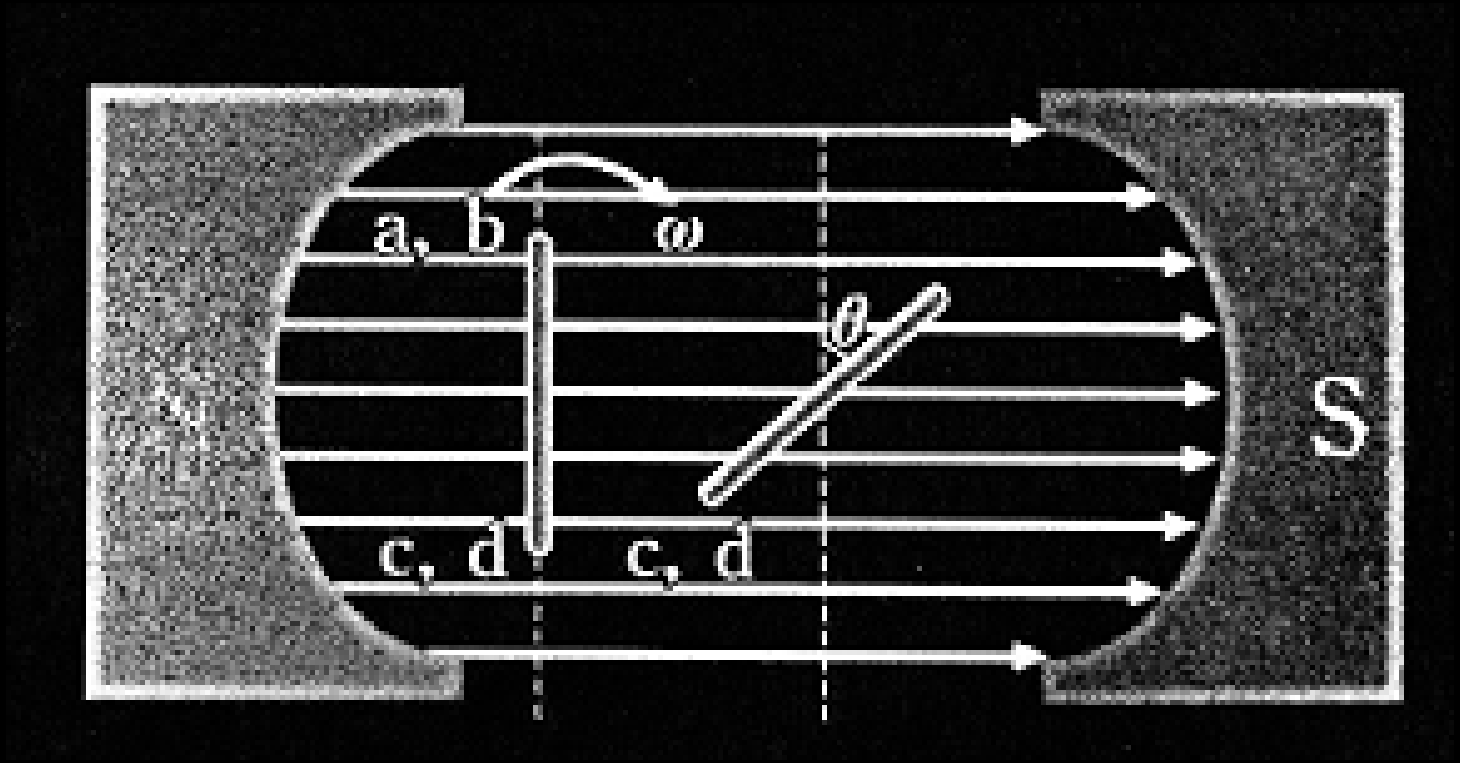
자체유도의 대표적 예시!



자체유도 기전력의 방향

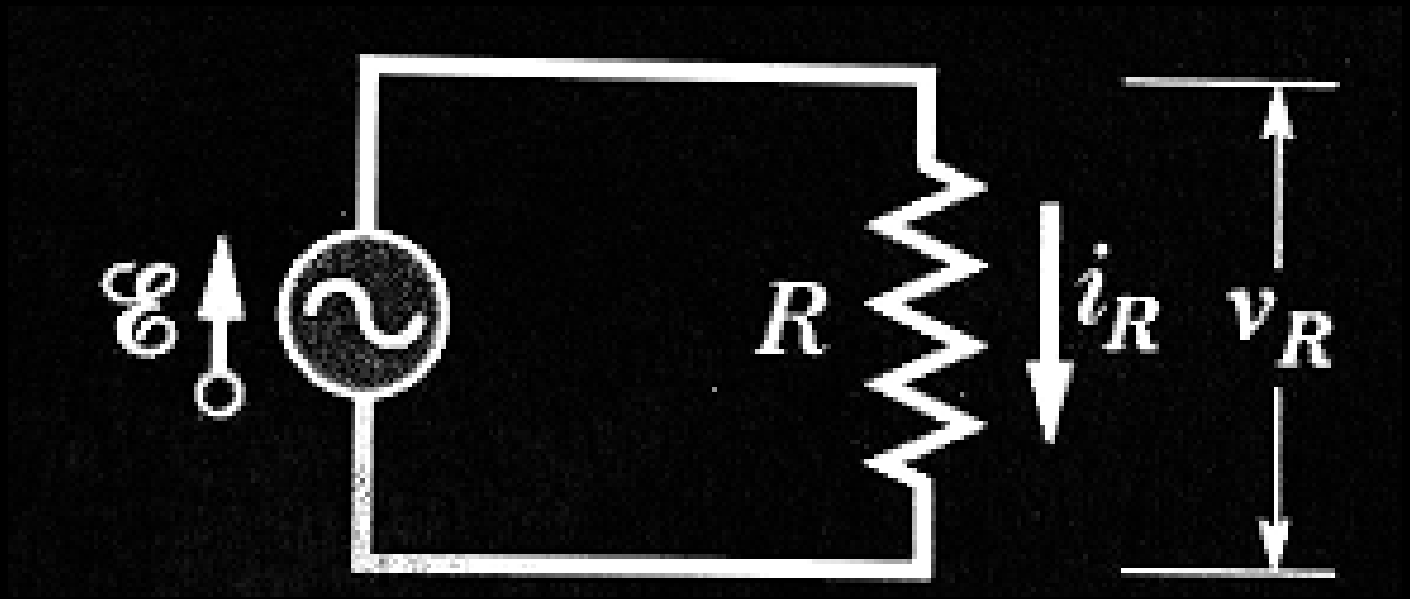

i (increasing)
$\mathcal{E}_L$
$\mathcal{E}_L$
i (decreasing)
$\mathcal{E}_L$
$\mathcal{E}_L$

교류 전기?

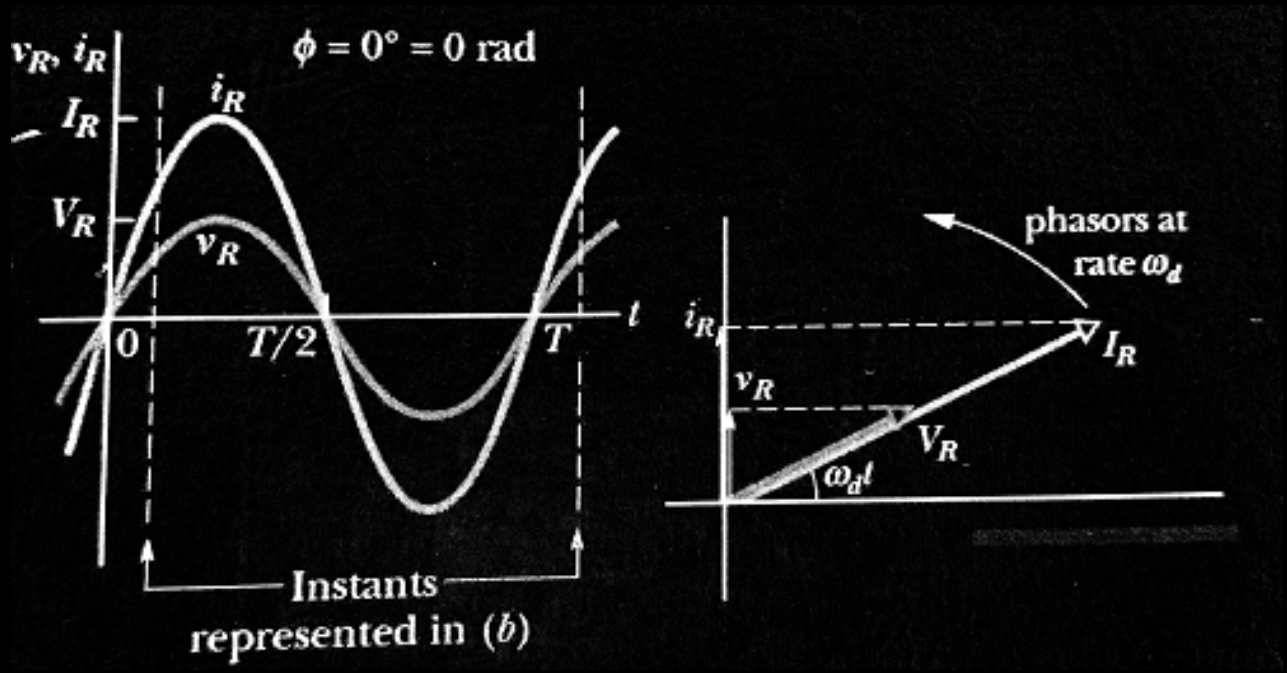

a, b
ω
θ
S
c, d
c, d

R, L, C 수식적 접근

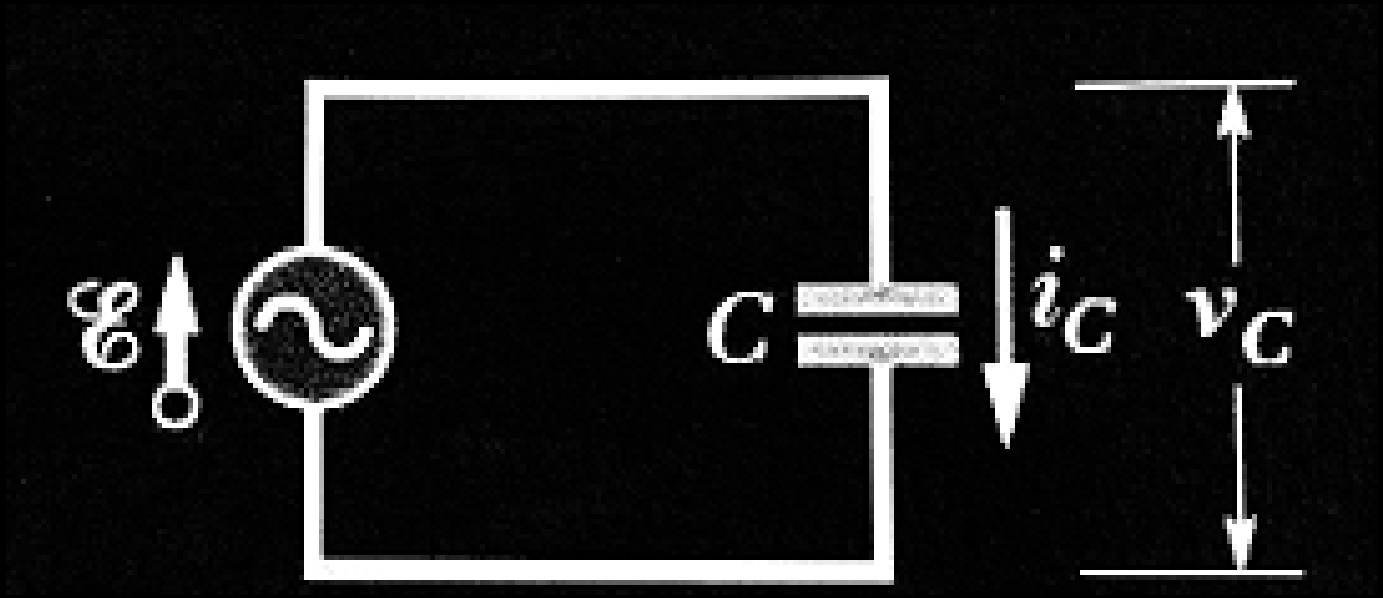
저항(R)의 수식적 표현



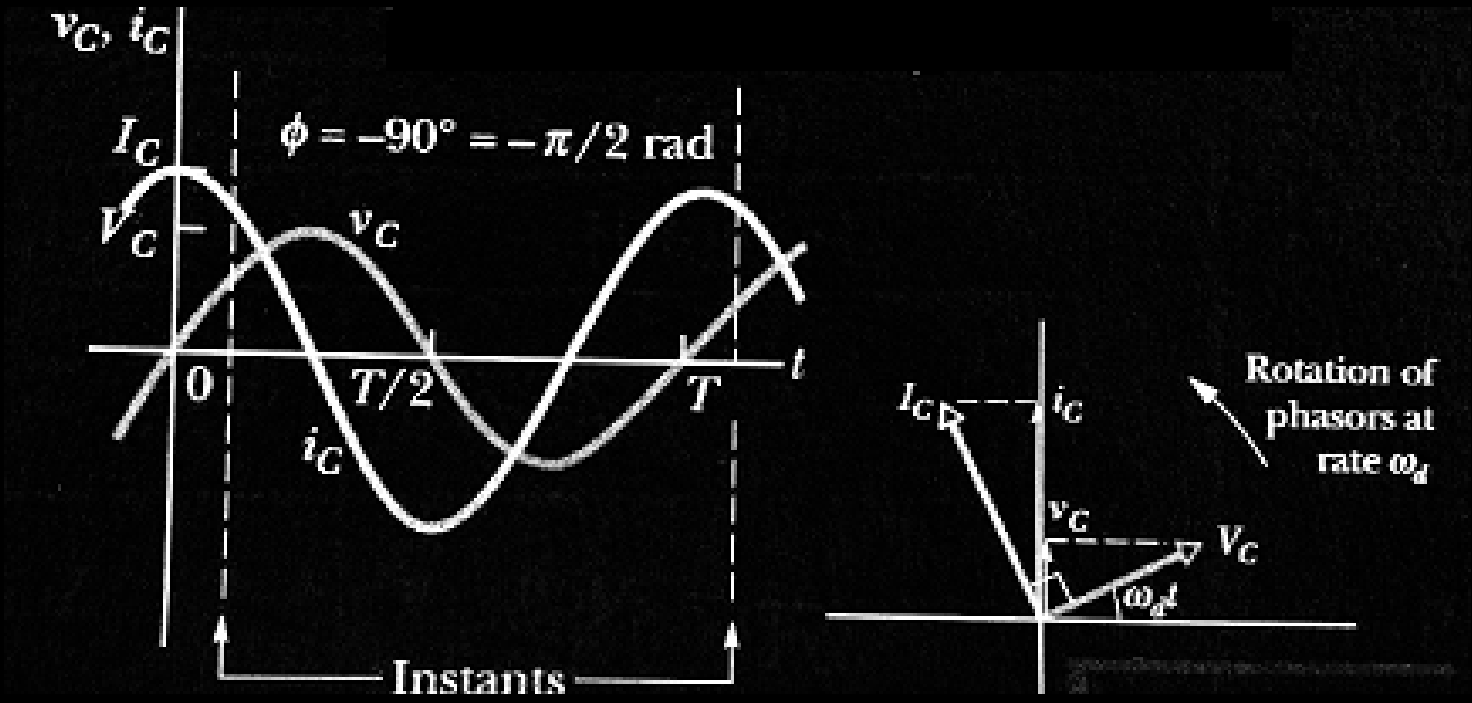
저항(R)의 위상자


v_R, i_R
$\phi = 0° = 0$ rad
i_R
I_R
V_R
v_R
0
$T/2$
T
t
Instants
represented in (b)
phasors at
rate ω_d
i_R
I_R
v_R
V_R
$\omega_d t$

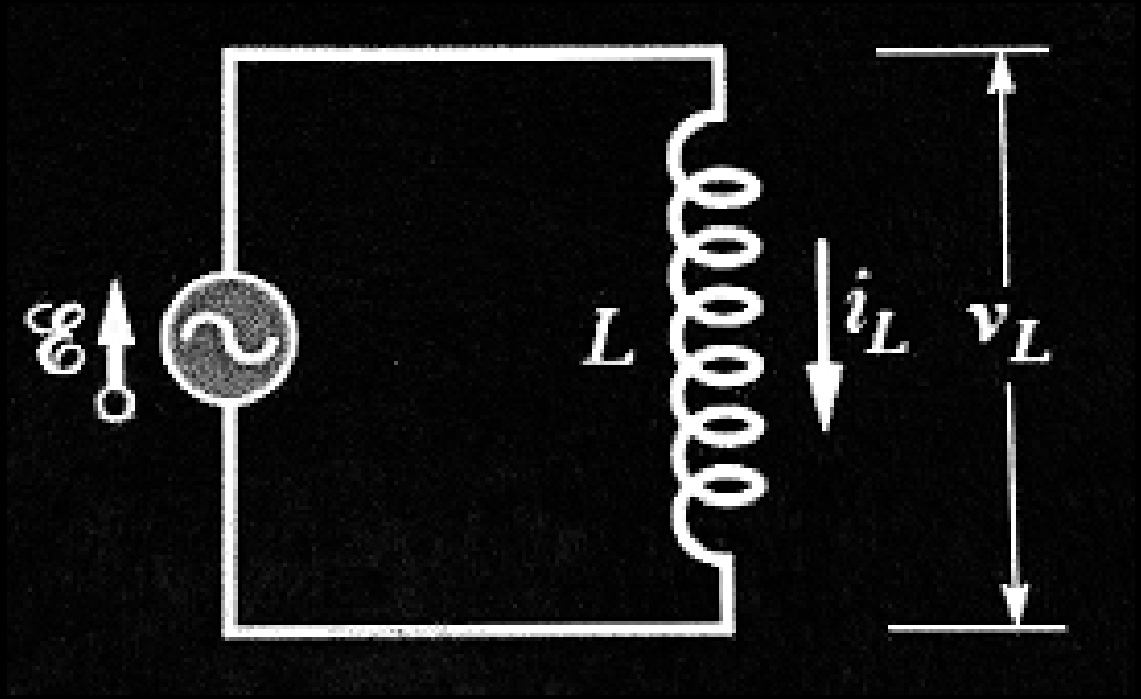
축전기(C)의 수식적 표현



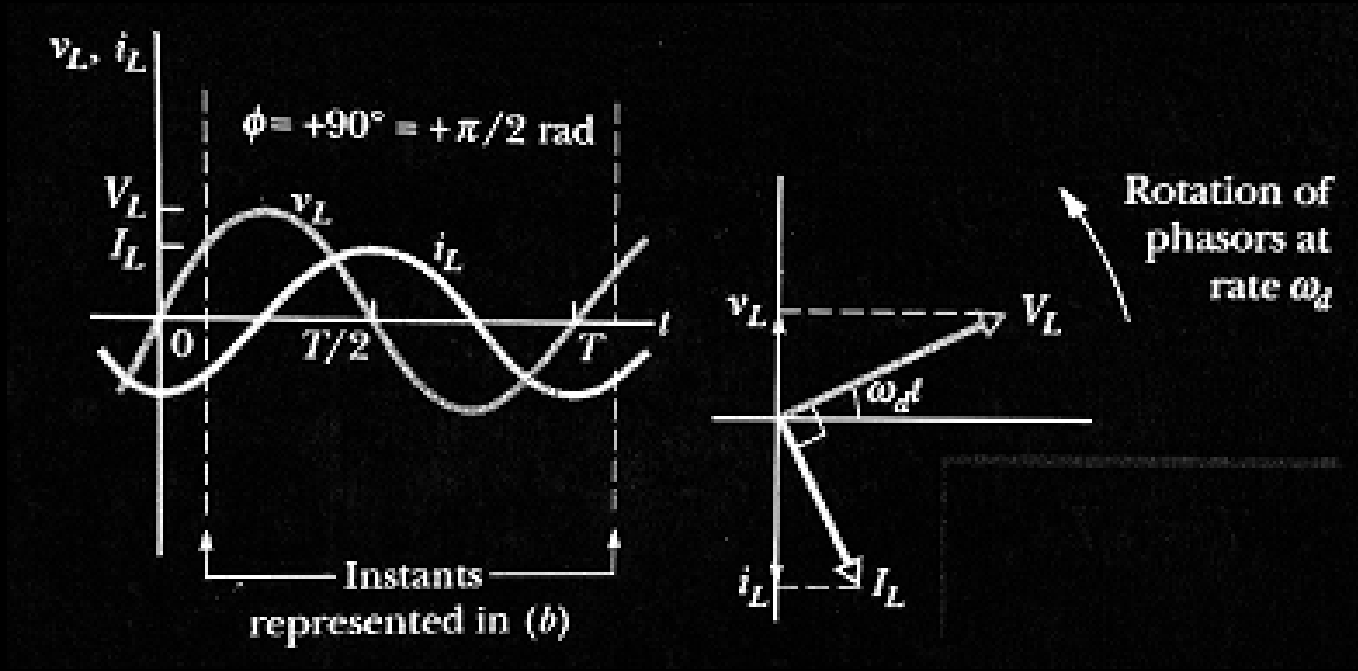
축전기(C)의 위상자


v_C, i_C
I_C
V_C
$\phi = -90° = -\pi/2$ rad
v_C
i_C
0
$T/2$
T
t
Instants
I_C
i_C
v_C
V_C
$\omega_d t$
Rotation of phasors at rate ω_d

코일(L)의 수식적 표현

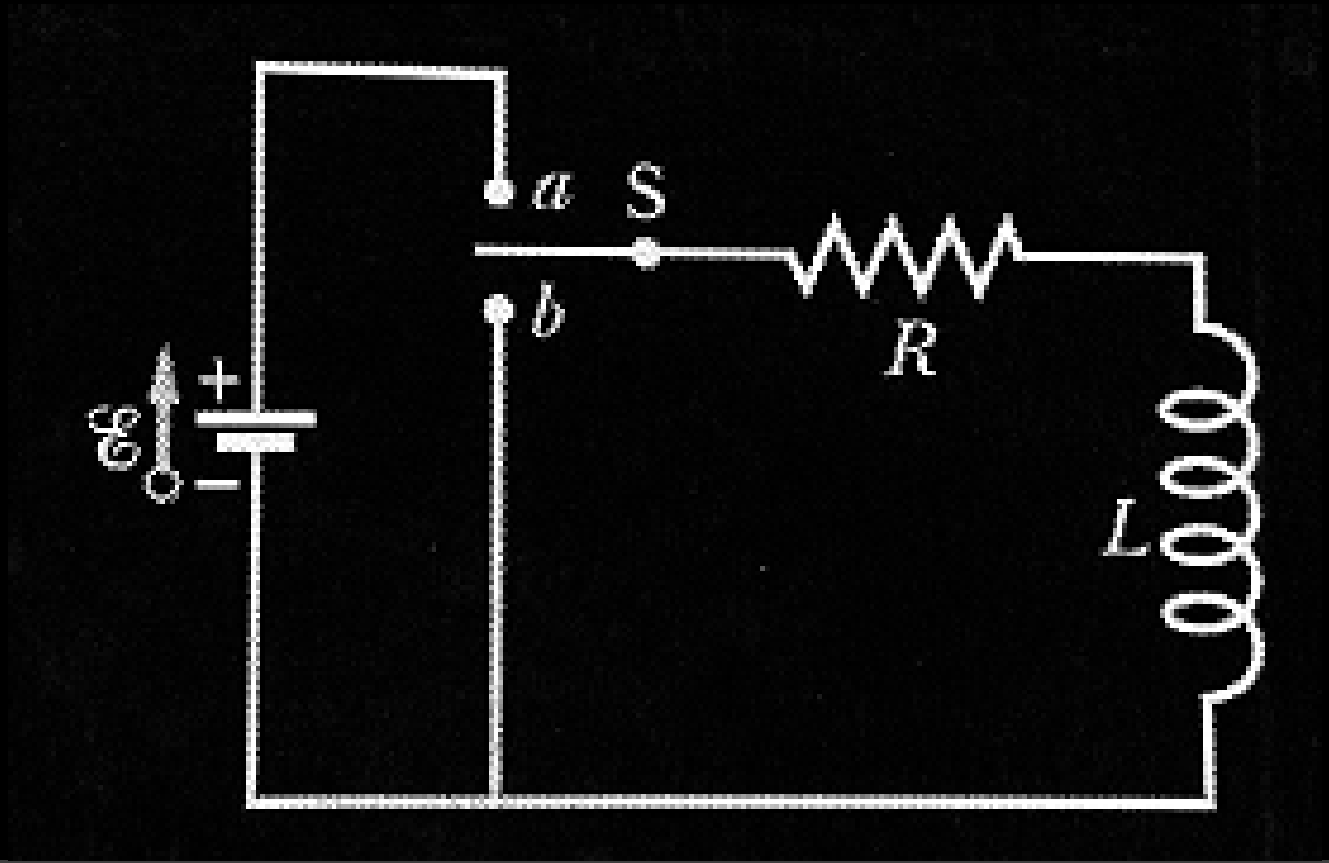


코일(L)의 위상자

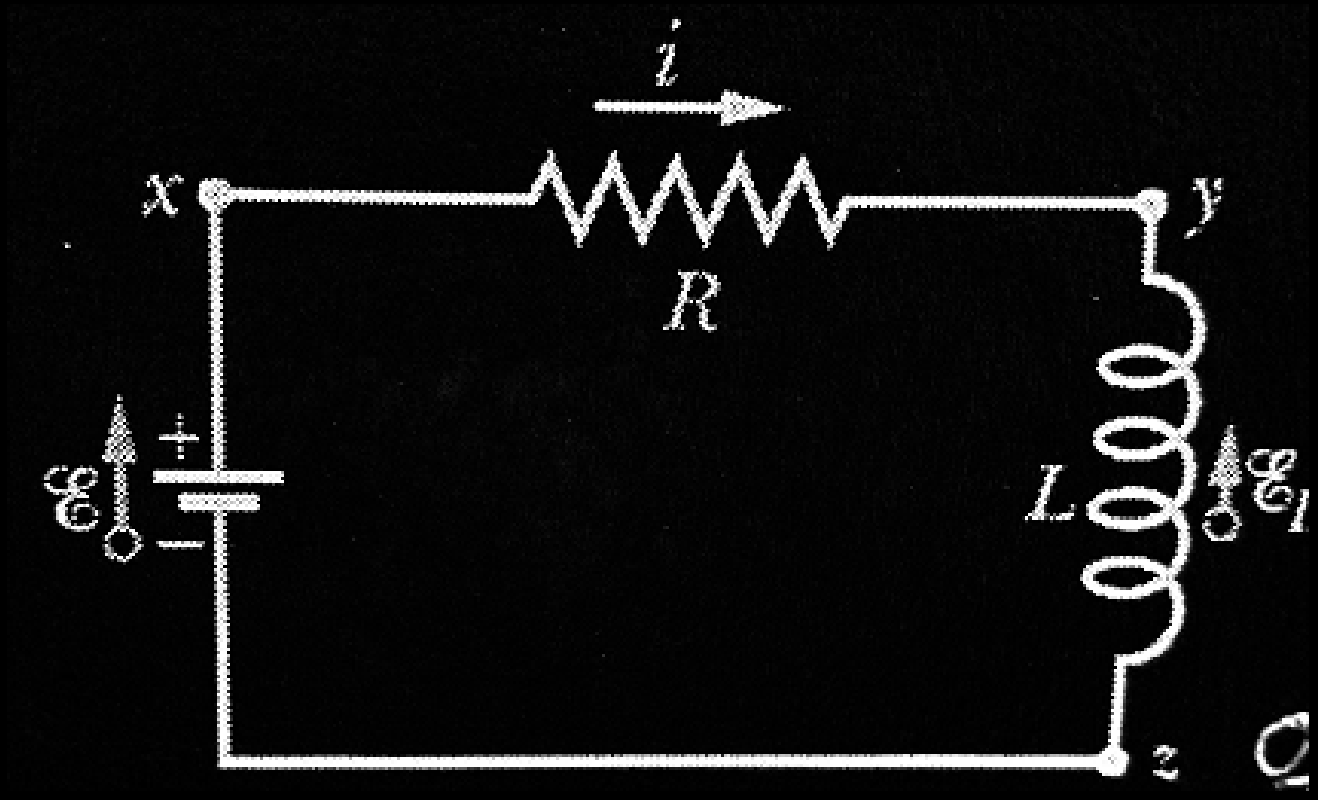

v_L, i_L
$\phi = +90° = +\pi/2$ rad
V_L
I_L
v_L
i_L
0
$T/2$
T
t
Instants
represented in (b)
v_L
V_L
$\omega_d t$
i_L
I_L
Rotation of
phasors at
rate ω_d

여러 가지 회로

RL 회로

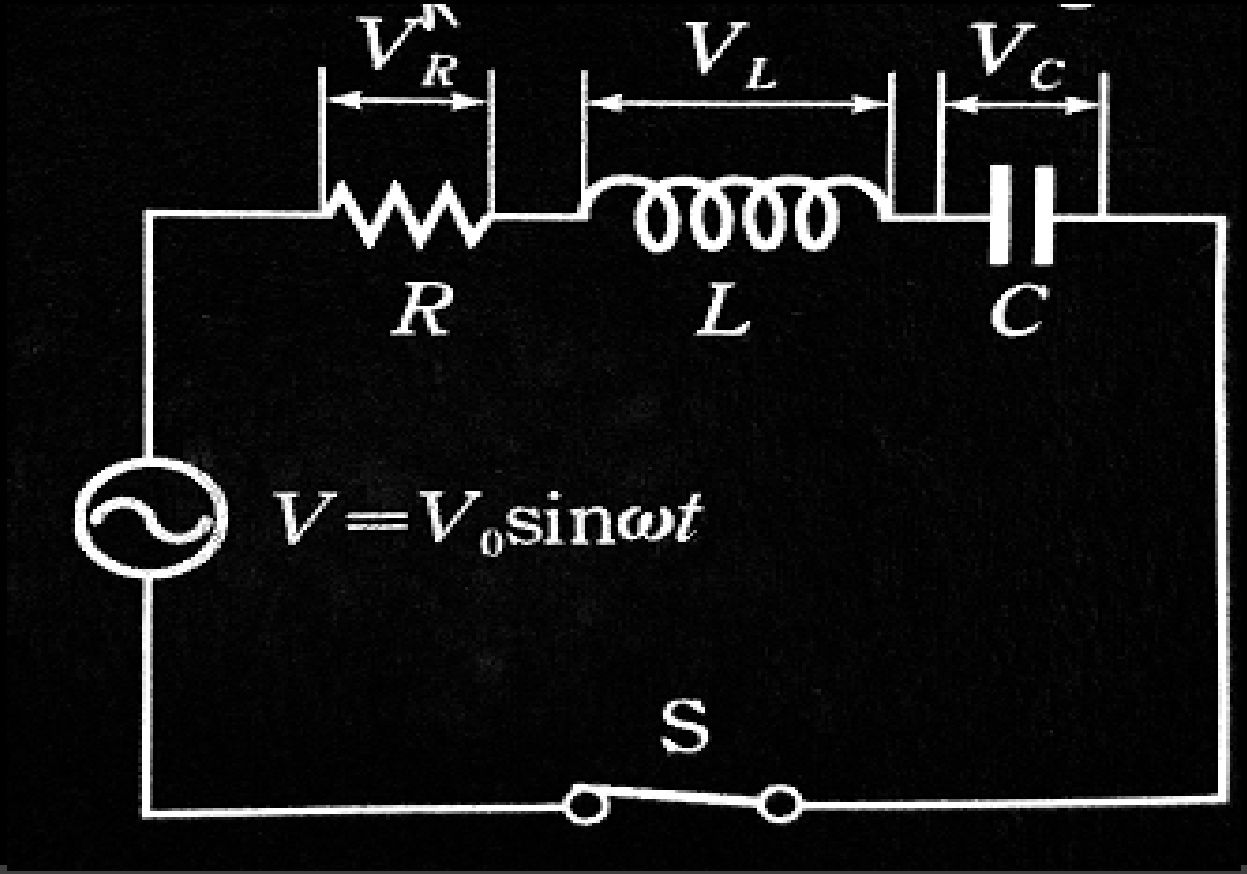


유도기에서의 자기 퍼텐셜에너지

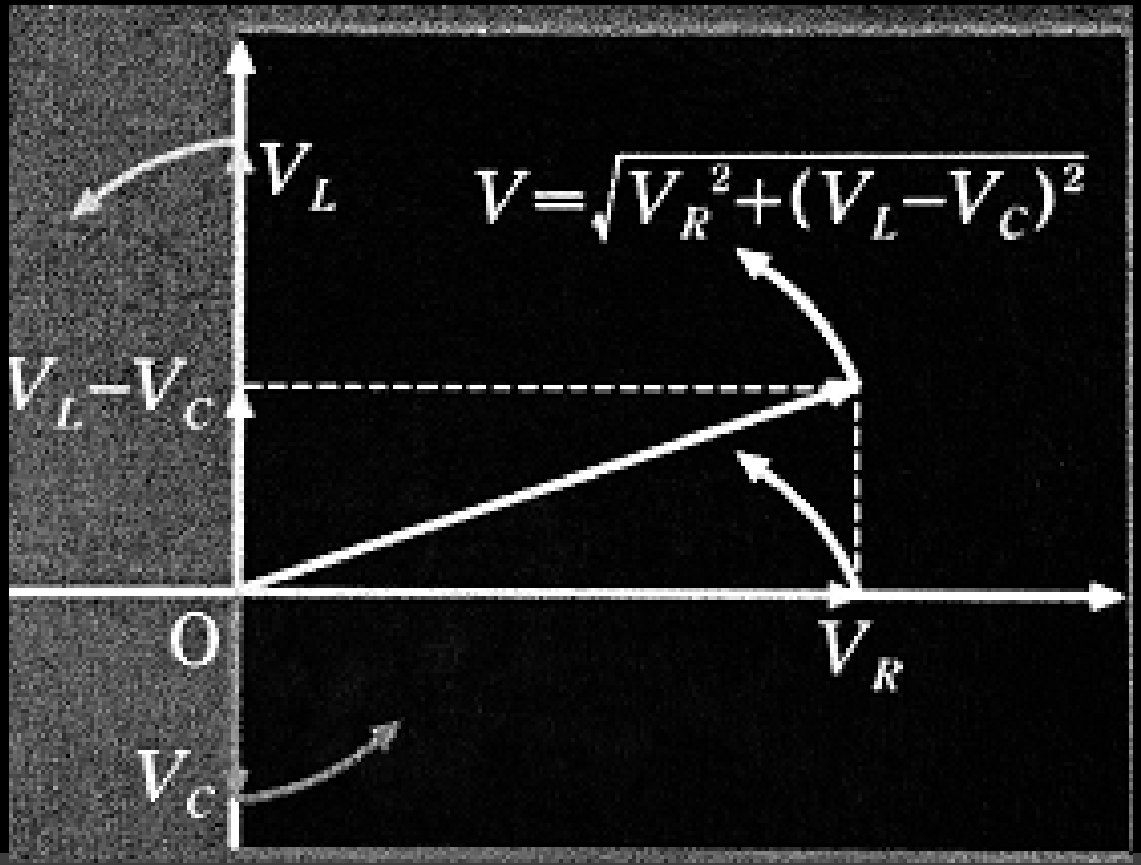


RLC 회로

RLC 회로의 분석

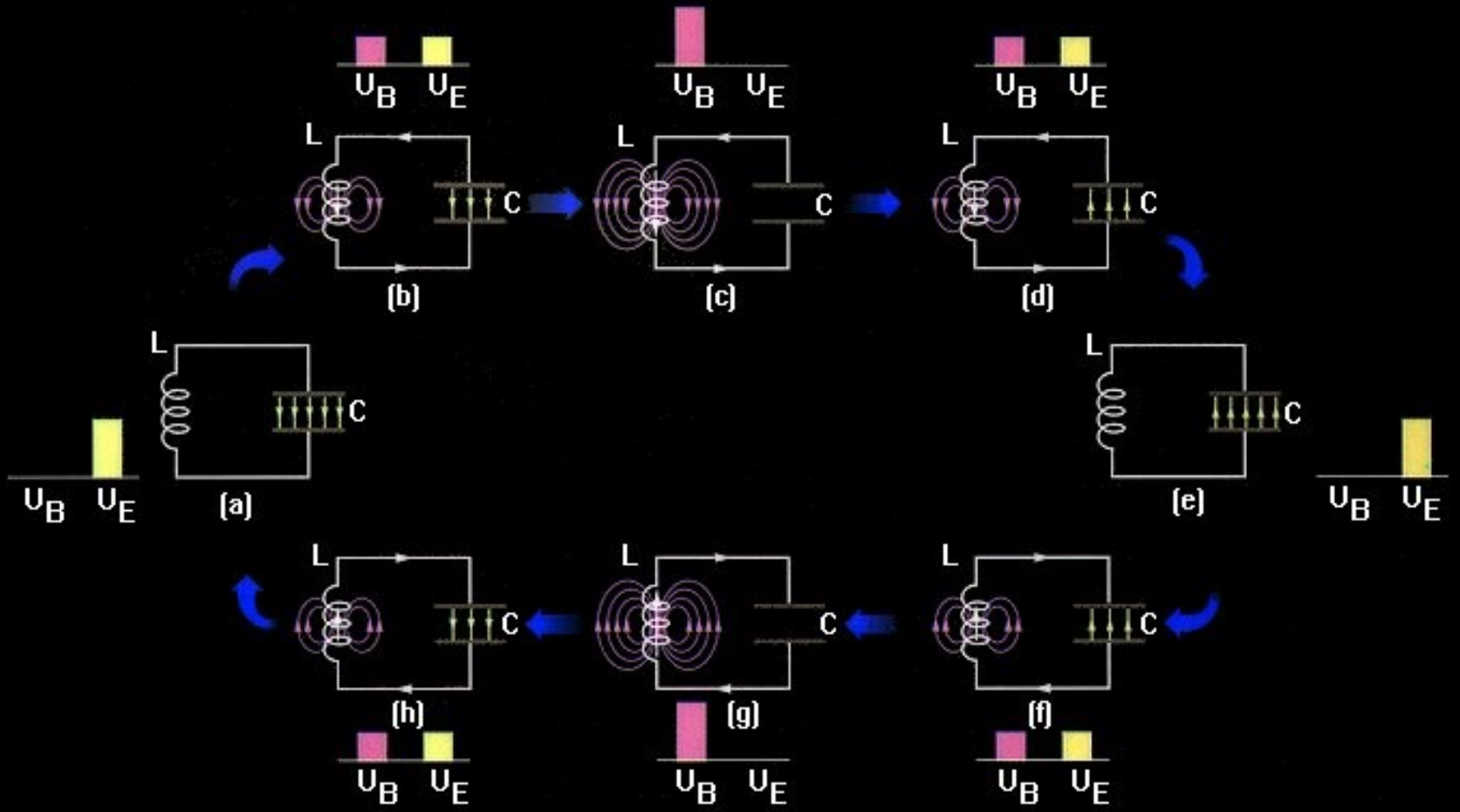


RLC 회로의 분석



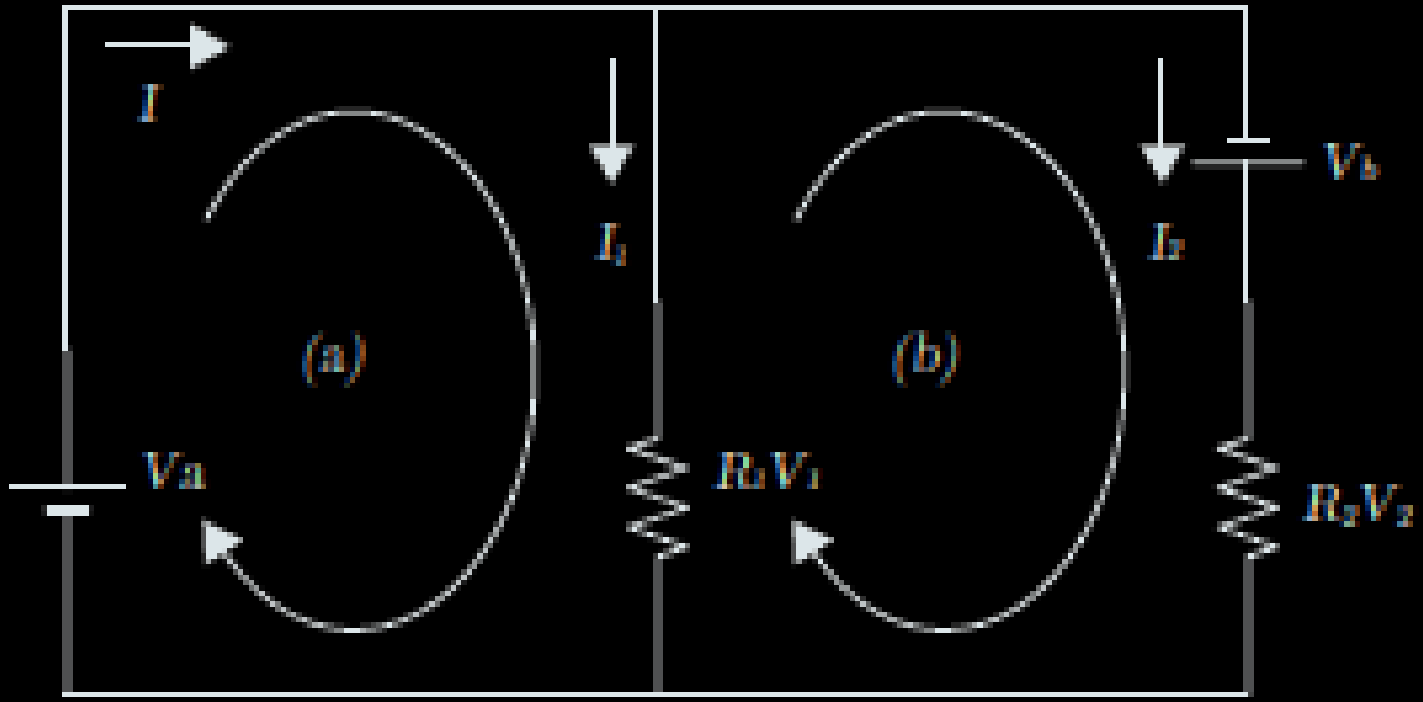
RLC 회로의 감쇠진동

LC 진동



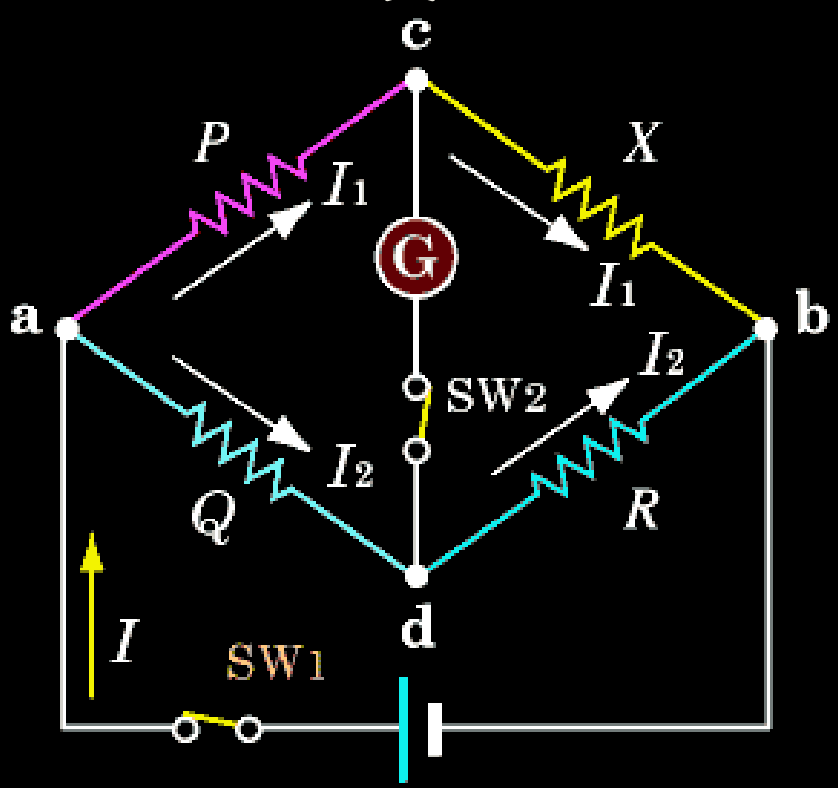
키르히호프 법칙

뜻?



휘트스톤 브릿지

뜻?



Wheatstone Bridge

22차시 예고

전자기파, 맥스웰 방정식

감사합니다! ☺