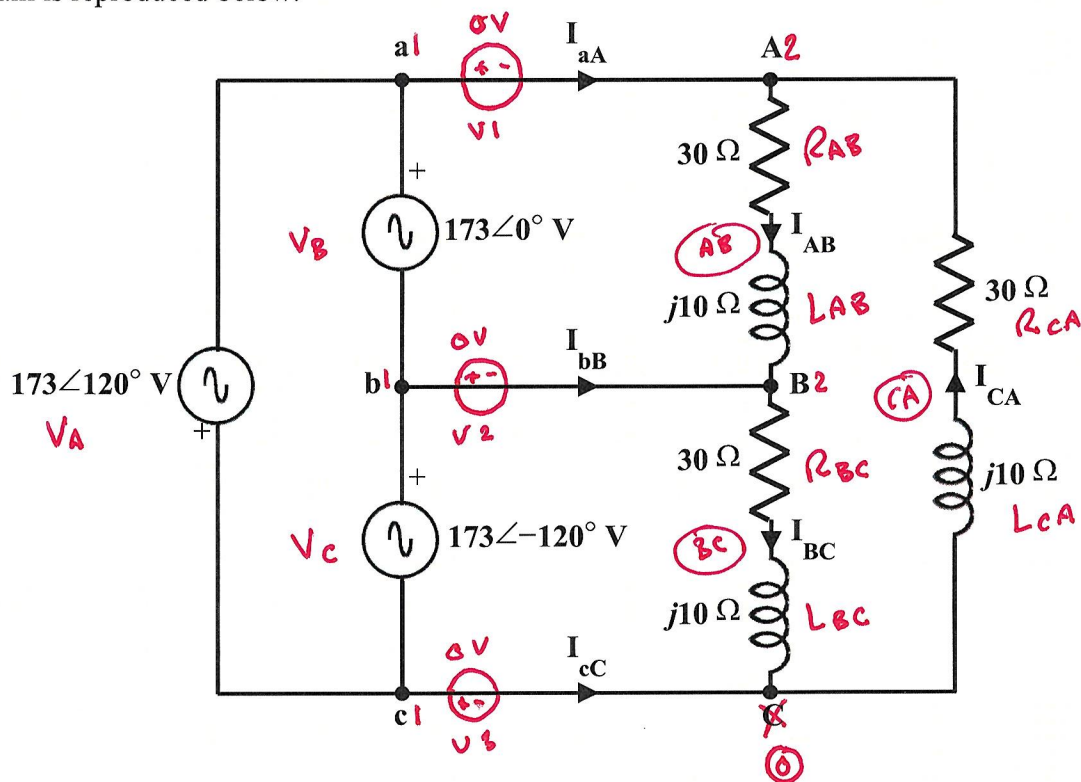


Homework Problem #041

Use LTspice to verify your answers for Homework Problem #040. The circuit schematic diagram is reproduced below.



Assume  $\omega = 1 \text{ rad/s}$ .

Then  $j10 = j\omega L \Rightarrow L = 10 \text{ H}$

For LTspice:

```
VA  c1  a1  AC  173  120
VB  a1  b1  AC  173  0
VC  b1  c1  AC  173  -120
V1  a1  A2  DC  0
V2  b1  B2  DC  0
V3  c1  0   DC  0
RAB  A2  AB  30
LAB  AB  B2  10
RBC  B2  BC  30
LBC  BC  0   10
RCA  CA  A2  30
LCA  0   CA  10
.AC  LIN  1  {1/(2*pi)} {1/(2*pi)}
```

See the attached page for results.

```

LTSpice XVII - [Spring 2022 EE 3340 Homework Problem 041.cir]
File Edit View Simulate Tools Window Help
* Q:\Websites\RES\EE 3340\homework problems\Spring 2022 EE 3340 Homework Problem 041.cir
VA c1 a1 AC 173 120
VB a1 b1 AC 173 0
VC b1 c1 AC 173 -120
V1 a1 A2 DC 0
V2 b1 B2 DC 0
V3 c1 0 DC 0
RAB A2 AB 30
LAB AB B2 10
RBC B2 BC 30
LBC BC 0 10
RCA CA A2 30
LCA 0 CA 10
.AC LIN 1 (1/(2*pi)) (1/(2*pi))
.end

```

--- AC Analysis ---

frequency:	0.159155	Hz		
V(c1):	mag: 1.00511e-014	phase: 135°	voltage	
V(a1):	mag: 173	phase: -60°	voltage	
V(b1):	mag: 173	phase: -120°	voltage	
V(a2):	mag: 173	phase: -60°	voltage	
V(b2):	mag: 173	phase: -120°	voltage	
V(ab):	mag: 119.906	phase: -125.246°	voltage	
V(bc):	mag: 54.7058	phase: -48.4401°	voltage	
V(ca):	mag: 54.7058	phase: 11.5599°	voltage	
I(Lca):	mag: 5.47058	phase: 101.566°	device_current	
I(Lbc):	mag: 5.47058	phase: -138.434°	device_current	
I(Lab):	mag: 5.47058	phase: -18.4344°	device_current	
I(Rca):	mag: 5.47058	phase: 101.566°	device_current	
I(Rbc):	mag: 5.47058	phase: -138.434°	device_current	
I(Rab):	mag: 5.47058	phase: -18.4344°	device_current	
I(V3):	mag: 9.47532	phase: 71.5656°	device_current	
I(V2):	mag: 9.47532	phase: -168.434°	device_current	
I(V1):	mag: 9.47532	phase: -48.4344°	device_current	
I(Vc):	mag: 45.2548	phase: 135°	device_current	
I(Vb):	mag: 51.0912	phase: 143.903°	device_current	
I(Va):	mag: 41.8836	phase: 146.674°	device_current	

*I<sub>ca</sub>* →  
*I<sub>bc</sub>* →  
*I<sub>ab</sub>* →  
*I<sub>cC</sub>* →  
*I<sub>bB</sub>* →  
*I<sub>aA</sub>* →