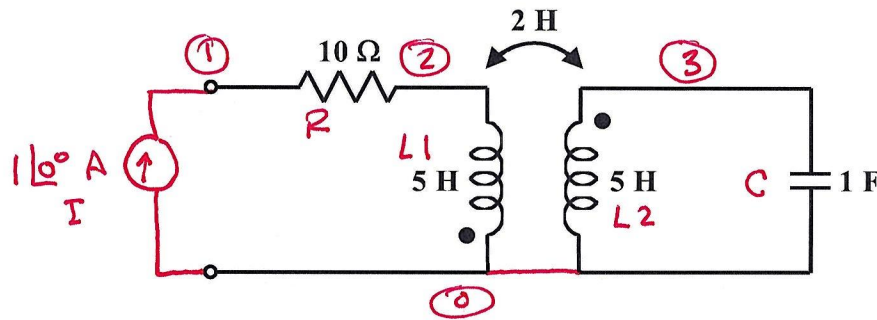


EE 3340

Homework Problem #033

Use LTspice to verify that this circuit has a resonance frequency of $\sqrt{\frac{5}{21}}$ rad/s.



$$k = \frac{2}{\sqrt{5 \cdot 5}} = 0.4$$

$$f_R = \frac{\omega_R}{2\pi}$$

See the attached page.

```

LTspice XVII - [Spring 2022 EE 3340 Homework Problem 033.cir]
File Edit View Simulate Tools Window Help
* Q:\Websites\RES\EE 3340\homework problems\Spring 2022 EE 3340 Homework Problem 033.cir
I 0 1 AC 1 0
R 1 2 10
L1 0 2 5
L2 3 0 5
k L1 L2 0.4
C 3 0 1
.AC LIN 1 {sqrt(5/21)/2/pi} {sqrt(5/21)/2/pi}
.end

```

```

* Q:\Websites\RES\EE 3340\homework problems\Spring 2022 EE 3340 Homework Problem 033.cir
--- AC Analysis ---
frequency:      0.0776597      Hz
V(1):           mag:           10 phase: 9.16e-014°      voltage
V(2):           mag: 1.59872e-014 phase: 90°           voltage
V(3):           mag: 5.12348 phase: 90°             voltage
I(C):           mag: 2.5 phase: 180°                device_current
I(L2):          mag: 2.5 phase: 0°                  device_current
I(L1):          mag: 1 phase: -180°                 device_current
I(I):           mag: 1 phase: 0°                    device_current
I(R):           mag: 1 phase: 0°                    device_current

```

phase angle is 0° at $\omega = \sqrt{\frac{5}{21}}$ rad/s