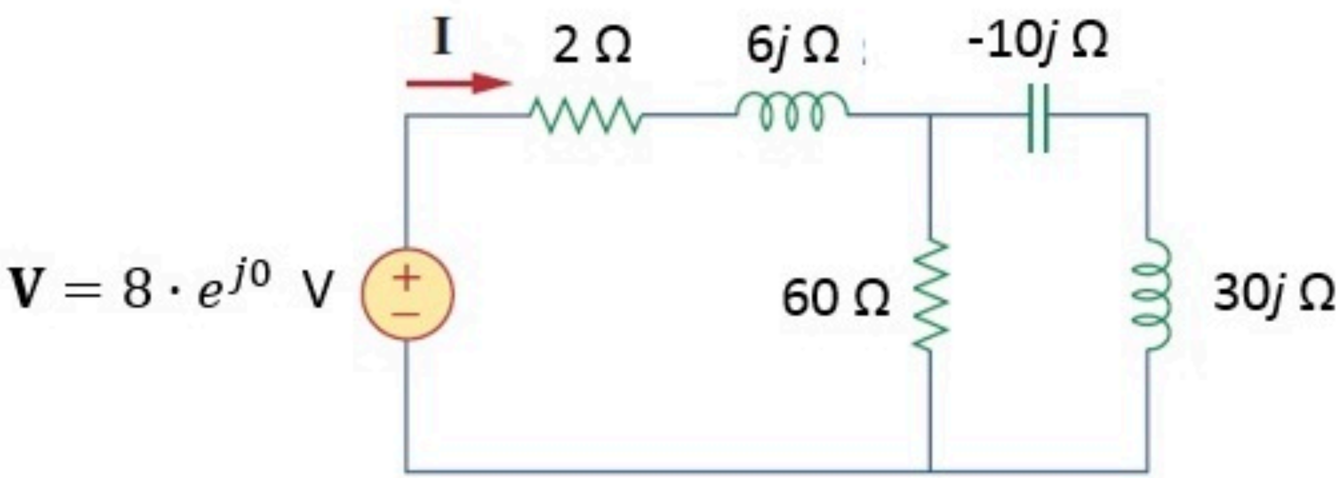
PP Phasors 011

Unlimited Attempts.

Find the phasor $\mathbf{I} = a + jb$.



Given Variables:

. : . .

Calculate the following:

a (A) :

0.1

b (A) :

-0.3

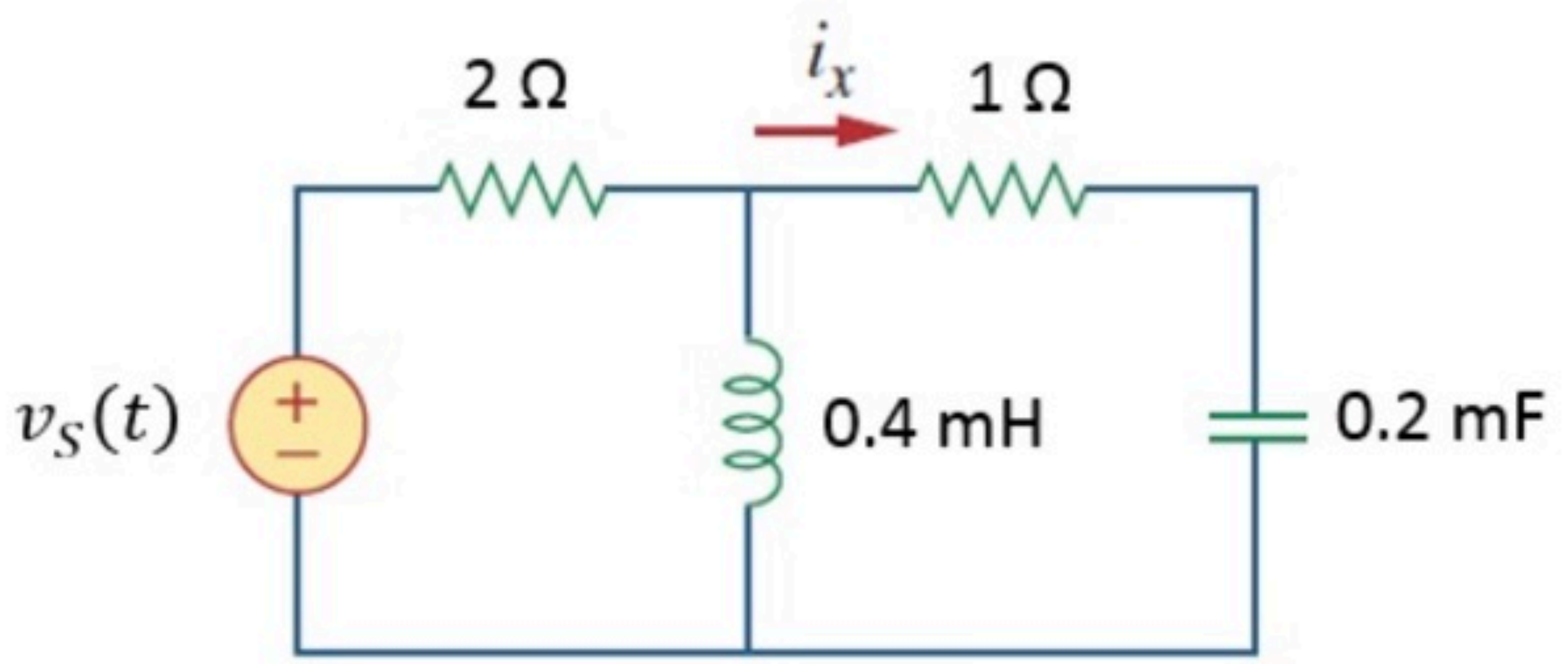
PP Phasors 012

Unlimited Attempts.

$$i_x(t) = 3\sqrt{2} \cdot \sin(5000t + 30°) \text{ A}$$

Find $v_S(t) = A \cdot \cos(W \cdot t + B)$.

(with $0 \leq A$ and $-180° \leq B \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A (V) :

12

W (rad/s) :

5000

B (degrees) :

-105

Hint: Stay algebraic with Vs as long as you can

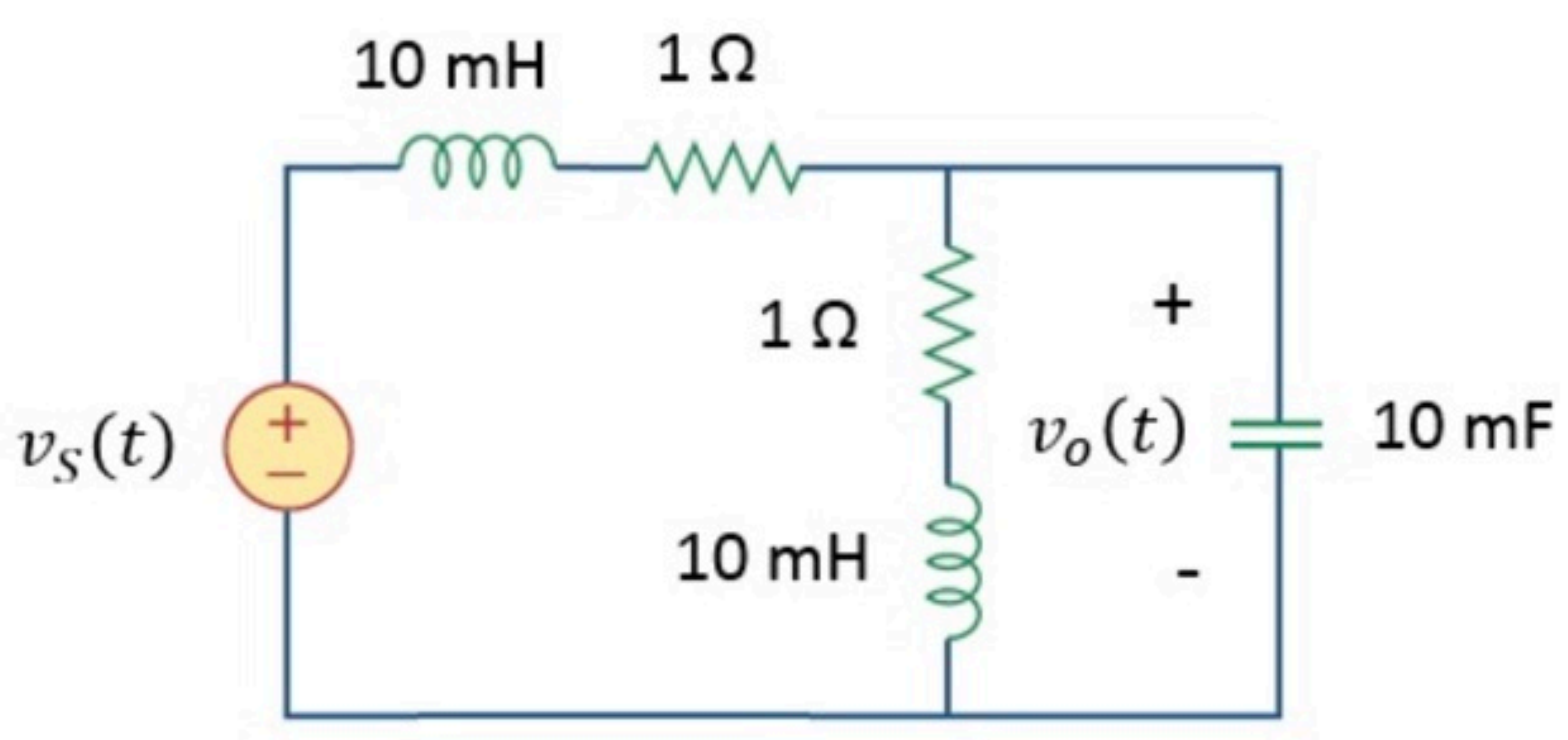
PP Phasors 013

Unlimited Attempts.

$$v_S(t) = 4\sqrt{2} \cdot \cos(100t + 30°) \text{ V}$$

Find $v_o(t) = A \cdot \cos(W \cdot t + B)$.

(with $0 \leq A$ and $-180° \leq B \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A (V) :

4

W (rad/s) :

100

B (degrees) :

-15

Hint: Use voltage divider.

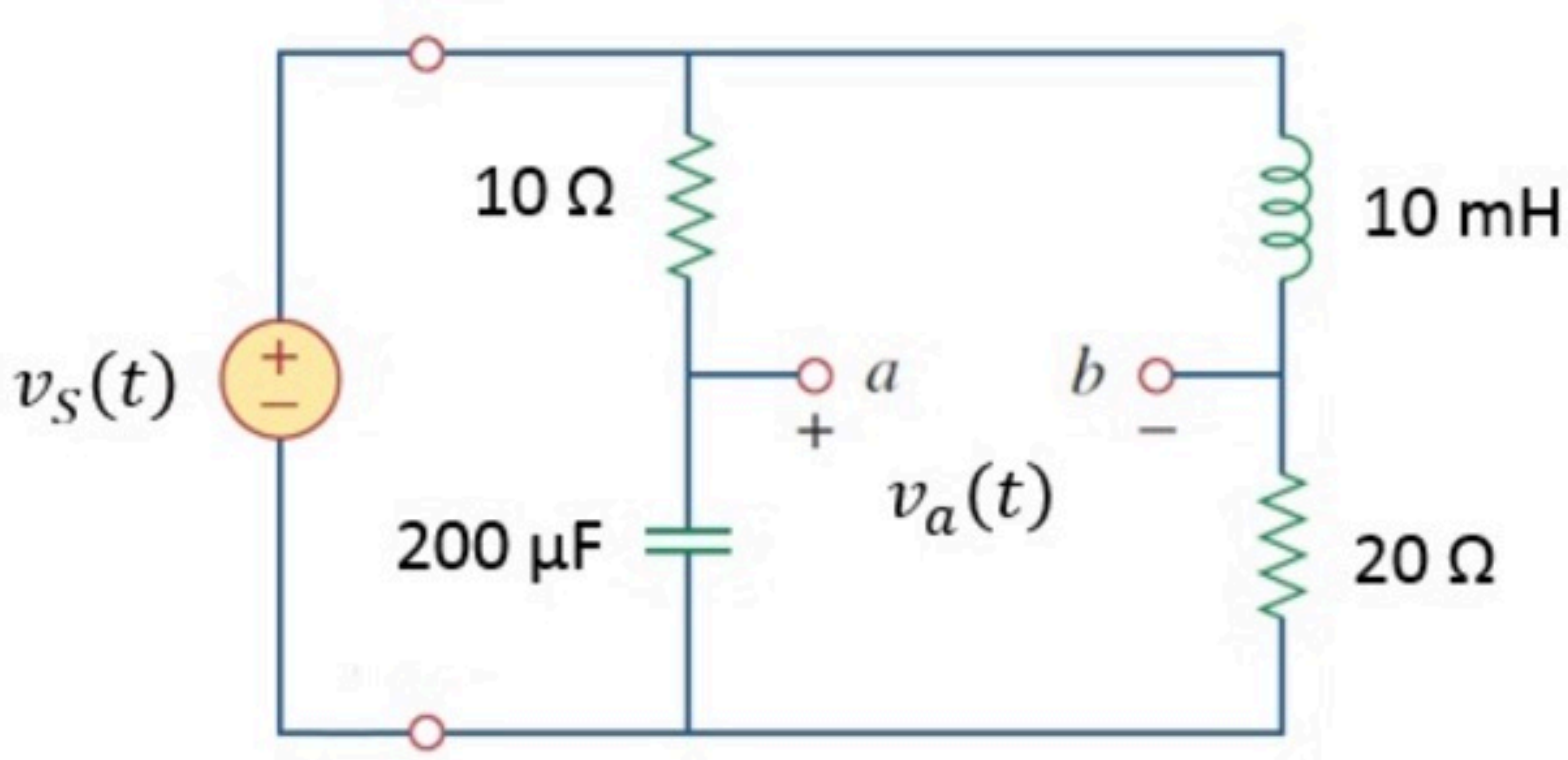
PP Phasors 014

Unlimited Attempts.

$$v_S(t) = 20 \cdot \sin(1000t + 45°) \text{ V}$$

Find $v_a(t) = A \cdot \cos(W \cdot t + B)$.

(with $0 \leq A$ and $-180° \leq B \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A (V) :

12

W (rad/s) :

1000

B (degrees) :

135

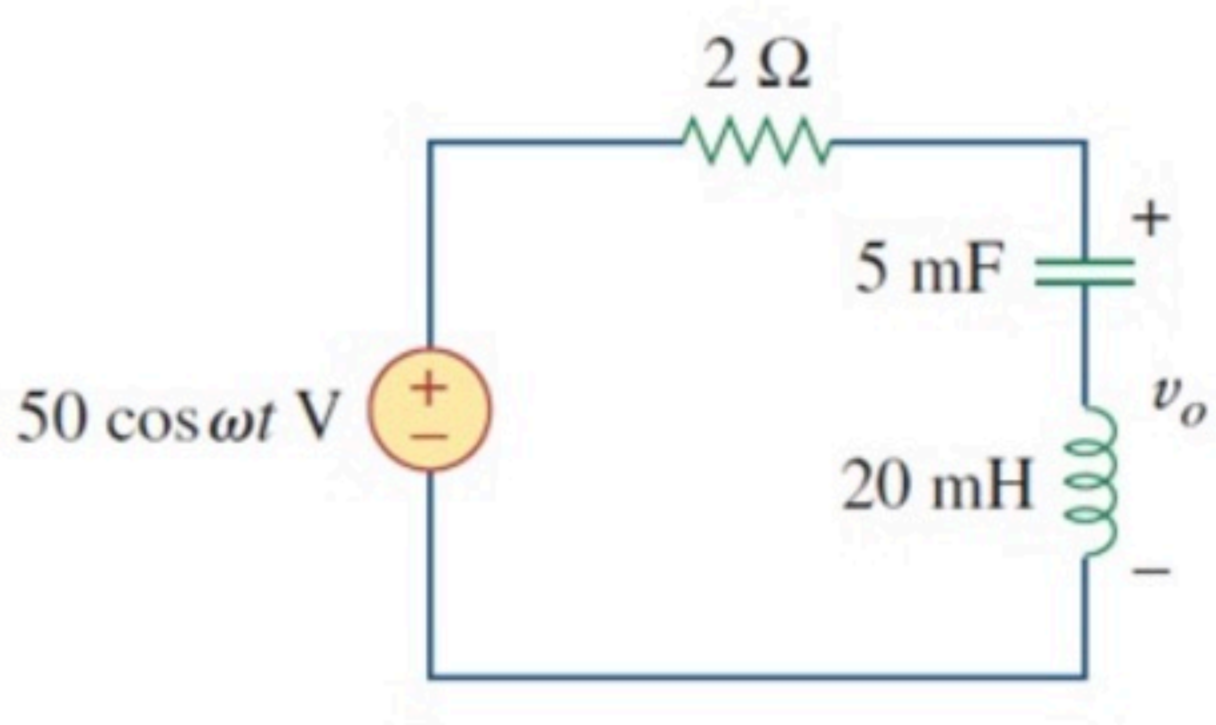
Hint: Use voltage divider.

PP Phasors 015

Unlimited Attempts.

Find the value of ω that results in $v_o = 0$ V.

(v_o is the voltage across the inductor and capacitor together)



Note: This is an example of 'resonance'. For each ω, the system behaves differently (i.e., v_o is a function of ω). For this one particular value of ω, however, the inductor and capacitor perfectly 'compensate' for each other.

Given Variables:

. : . .

Calculate the following:

w (rad/s) :

100

Hint: What should be the impedance of C and L in series for vo = 0?

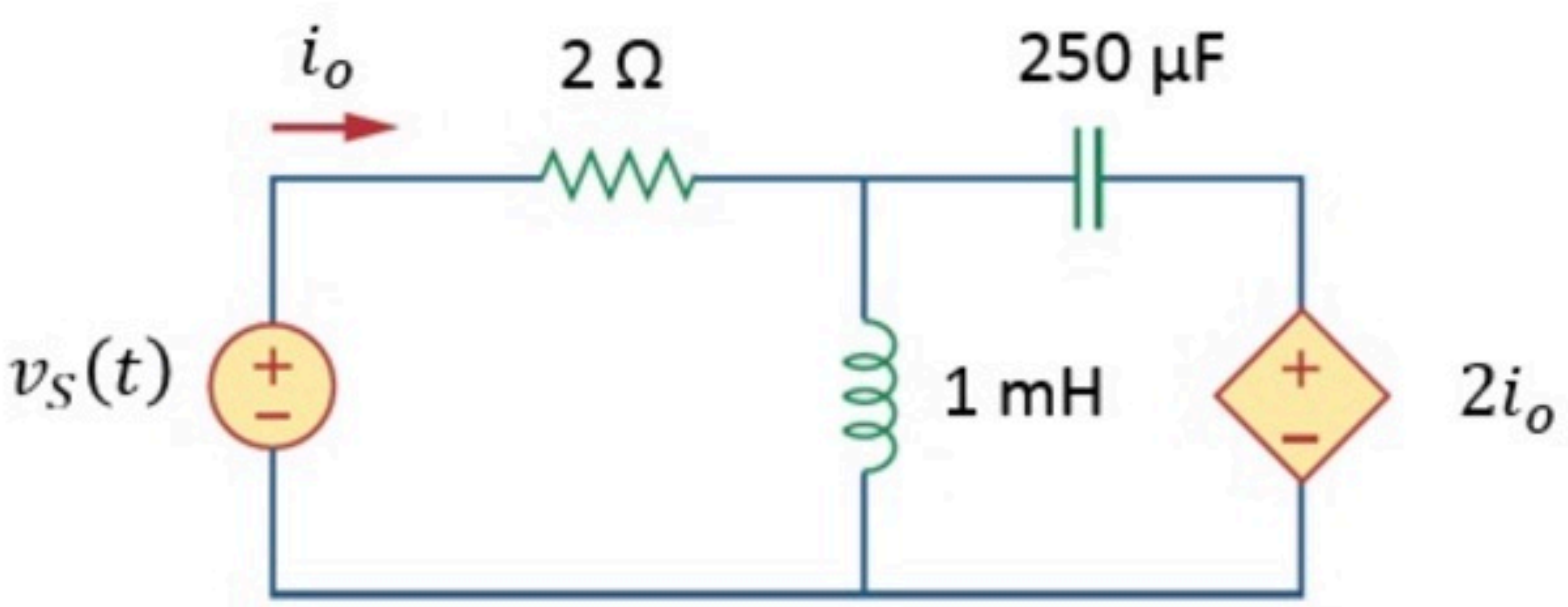
PP Phasors 016

Unlimited Attempts.

$v_S(t) = -\sqrt{2} \cdot \cos(1000t)$ V

Find $i_o(t) = A \cdot \cos(W \cdot t + B)$.

(with $0 \leq A$ and $-180° \leq B \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A (A) :

0.75

W (rad/s) :

1000

B (degrees) :

135

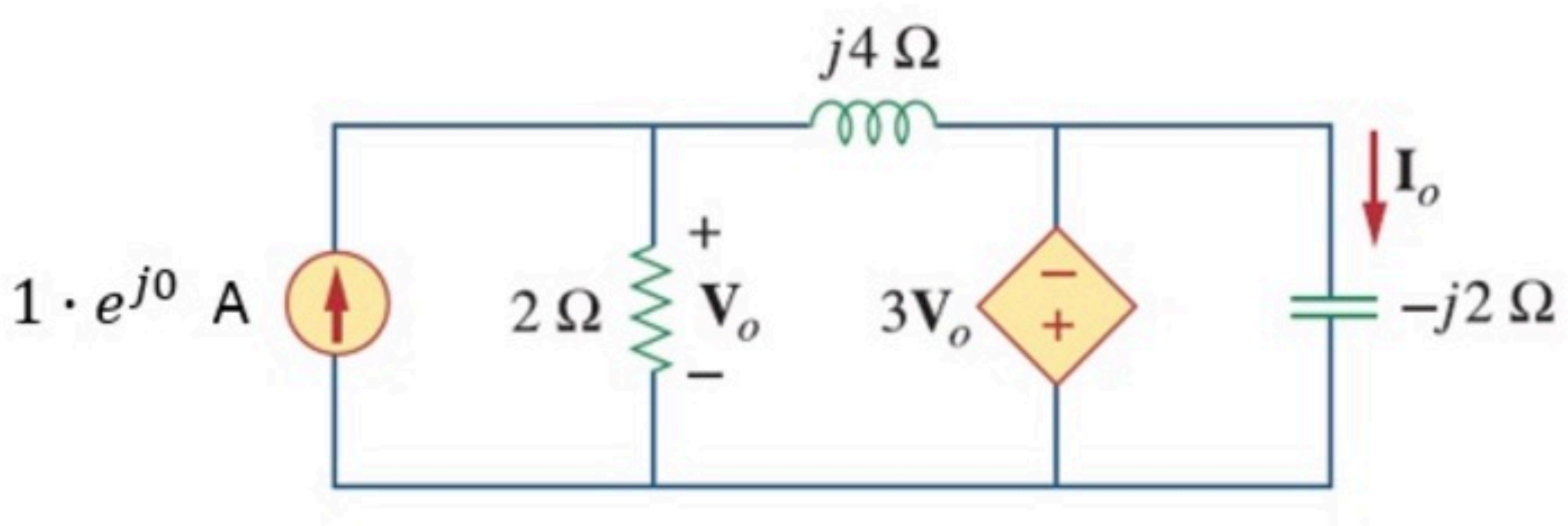
Hint: Consider nodal analysis. Leave V algebraic until the end.

PP Phasors 017

Unlimited Attempts.

Find the phasors

$\mathbf{V_o} = a + jb$ and $\mathbf{I_o} = c + jd$



Given Variables:

. : . .

Calculate the following:

a (V) :

0.4

b (V) :

0.8

c (A) :

1.2

d (A) :

-0.6

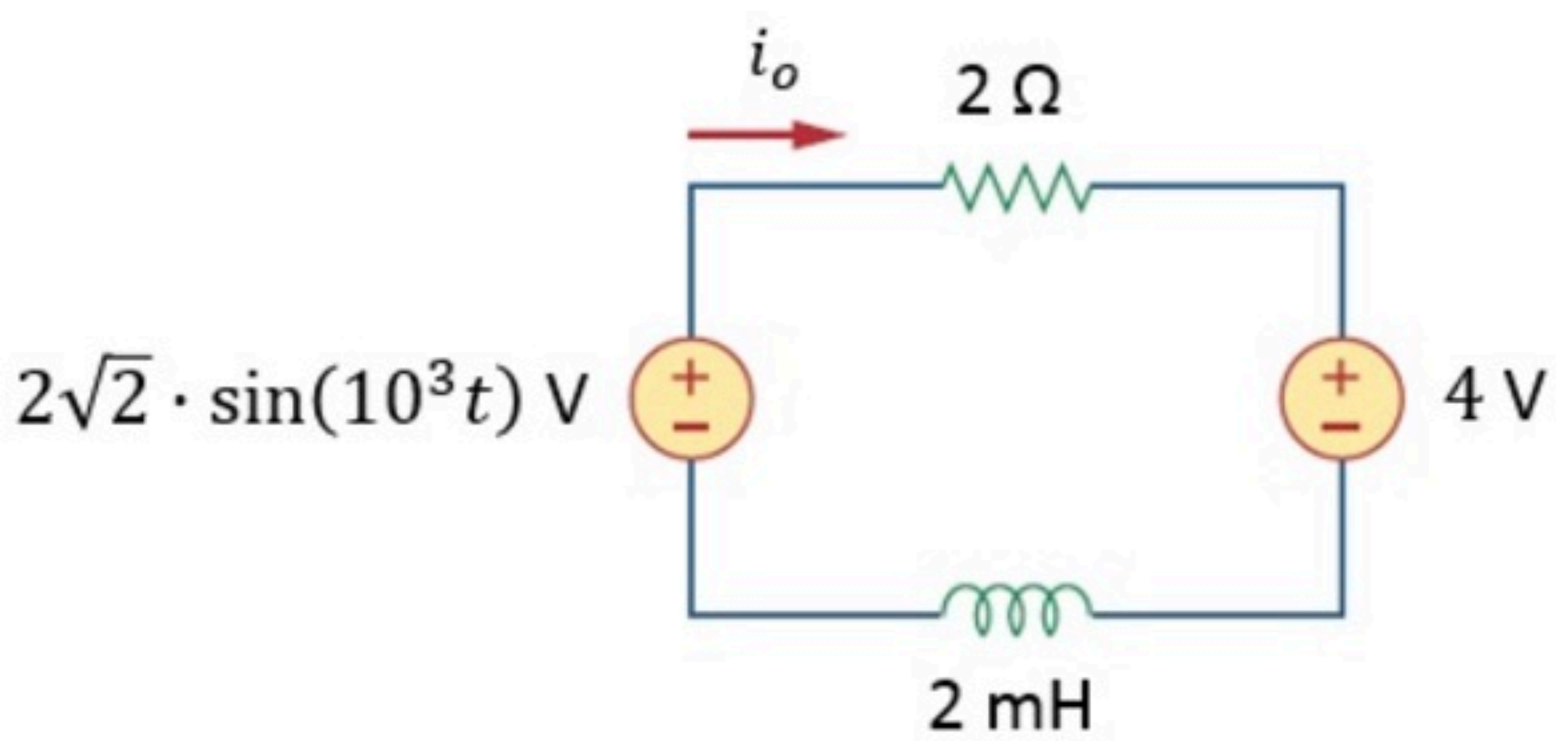
Hint: Use mesh analysis.

PP Phasors 018

Unlimited Attempts.

Find $i_o(t) = A \cdot \cos(W \cdot t + B) + D$.

(with $0 \leq A$ and $-180° \leq B \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A (A) :

1

W (rad/s) :

1000

B (degrees) :

-135

D (A) :

-2

Hint: Use superposition.

PP Phasors 019

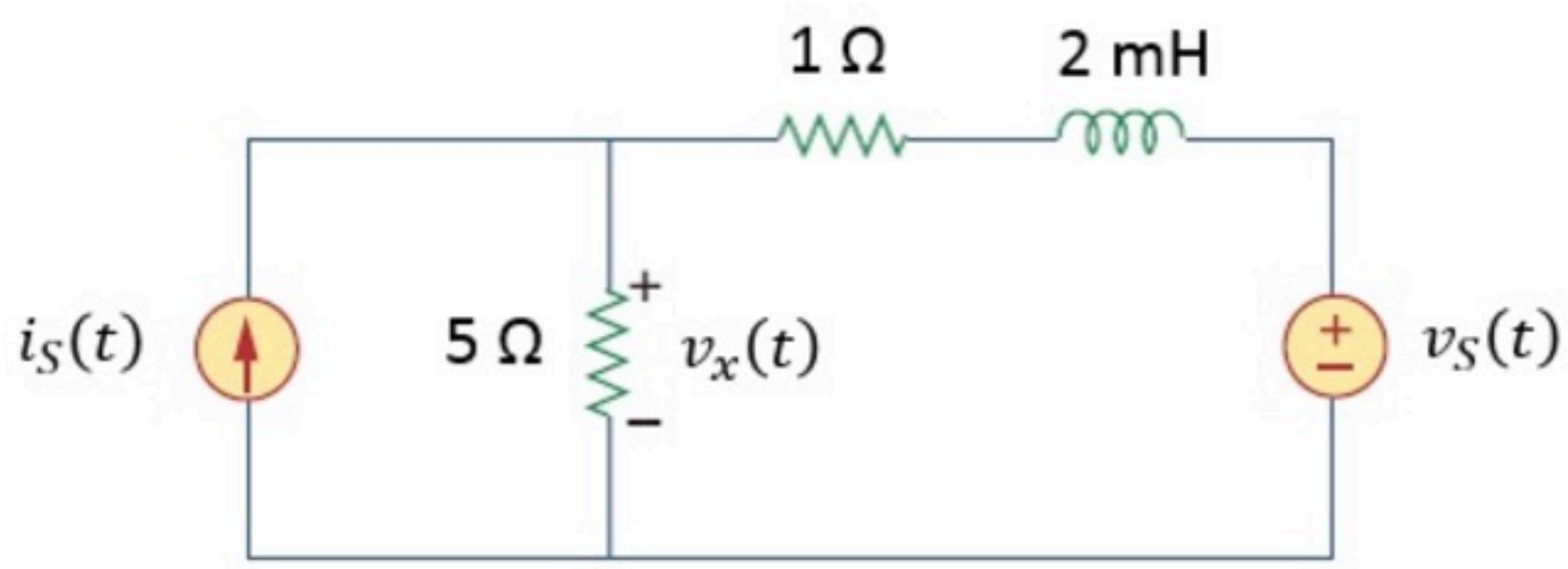
Unlimited Attempts.

$i_S(t) = 2\sqrt{2} \cdot \cos(1000t)$ A

$v_S(t) = 3\sqrt{2} \cdot \cos(3000t)$ V

Find $v_x(t) = A1 \cdot \cos(Wt + B1) + A2 \cdot \cos(3000t + B2)$.

(with $0 \leq A1, A2$ and $-180° \leq B1, B2 \leq 180°$)



Given Variables:

. : . .

Calculate the following:

A1 (V) :

5

W (rad/s) :

1000

B1 (degrees) :

45

A2 (V) :

2.5

B2 (degrees) :

-45

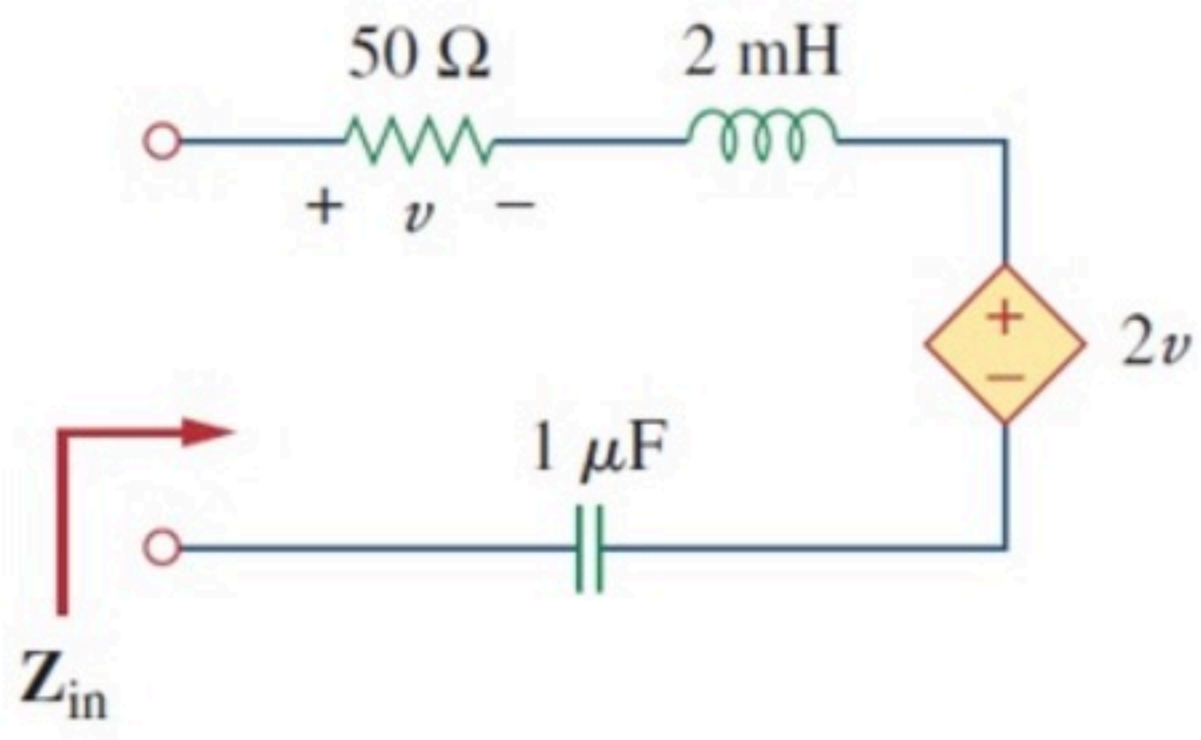
Hint: Use superposition.

PP Phasors 020

Unlimited Attempts.

Find the impedance $\mathbf{Z}_{\text{in}} = a + jb$

at $\omega = 10$ krad/s.



Given Variables:

. : . .

Calculate the following:

a (ohm) :

150

b (ohm) :

-80

Hint: Would you use a test voltage or a test current?

PP Phasors 022

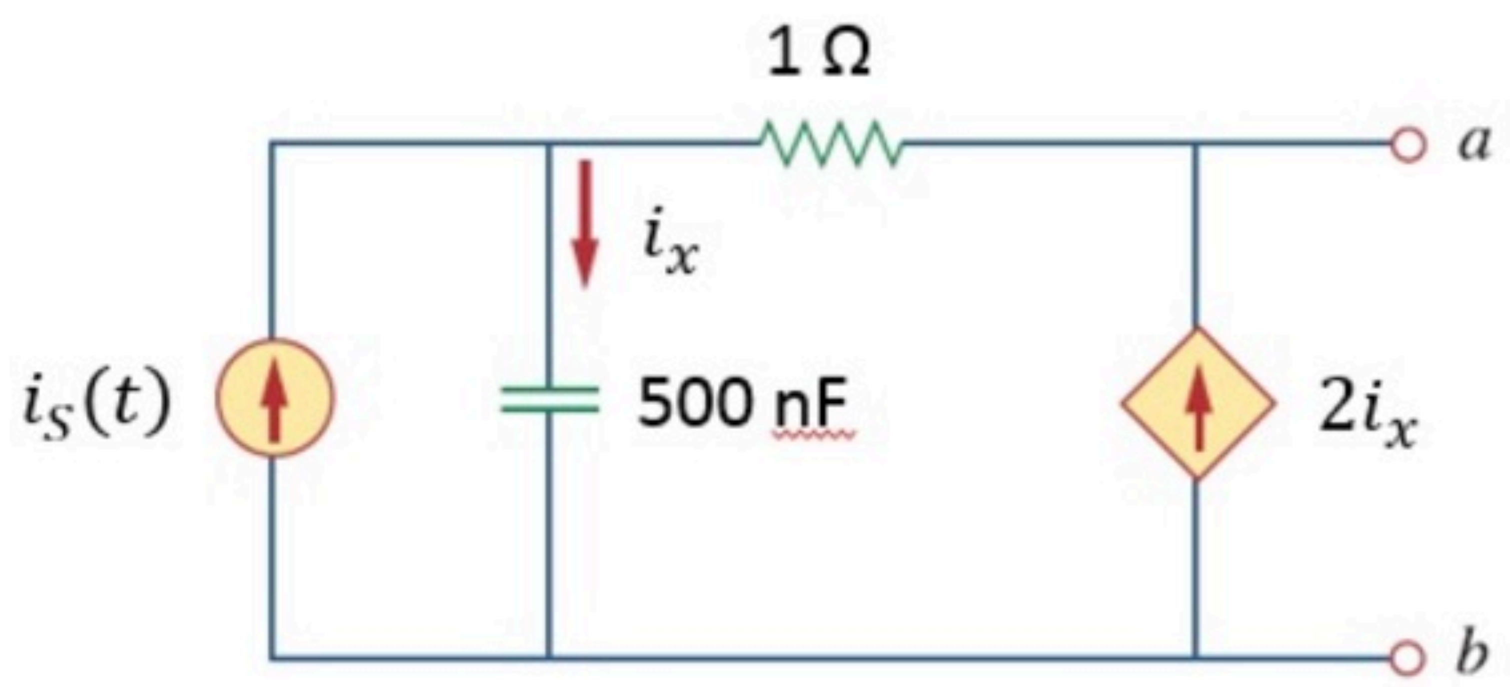
Unlimited Attempts.

$i_S(t) = -15 \cdot \sin(10^6 t)$ A

Find the Norton equivalent model between a and b, in phasor notation:

$\mathbf{I_N} = a + jb$

$\mathbf{Z_N} = c + j\mathrm{d}$



Note: This phasor Norton model is only valid for the particular frequency of the source (in this case, $\omega = 10^6$ rad/s).

Given Variables:

. : . .

Calculate the following:

a (A) :

-6

b (A) :

18

c (ohm) :

-1

d (ohm) :

2

Hint: Use a test voltage or current to find ZN.