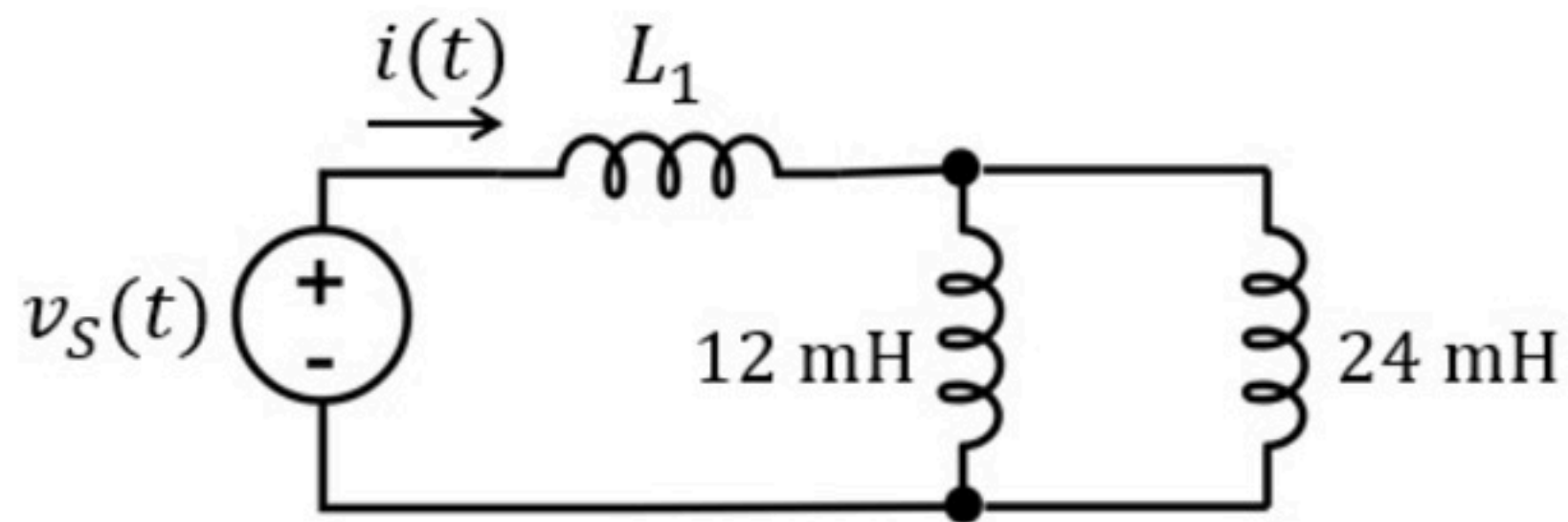


Capacitors Inductors 006

Unlimited Attempts.

Find the current i (i.e., the constant B).

(For this problem, ignore the initial conditions. As we will see later in this course, this means we assume the system is in what is called “steady state”.)



$$v_S(t) = A \cdot \cos(2000t)$$

$$i(t) = B \cdot \sin(2000t)$$

Given Variables:

A : 8 V

L1 : 2 mH

Calculate the following:

B (mA) :

400

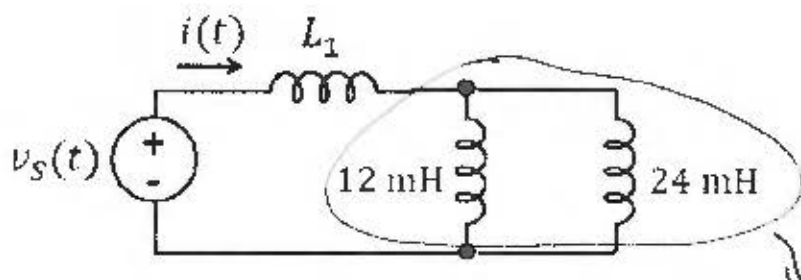


Find the current i (i.e., the constant B).

$$A = 4.8 \text{ V}$$

$$L_1 = 4 \text{ mH}$$

(For this problem, ignore the initial conditions. As we will see later in this course, this means we assume the system is in what is called "steady state".)

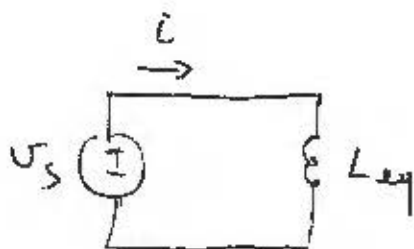


$$v_s(t) = A \cdot \cos(2000t)$$

$$i(t) = B \cdot \sin(2000t)$$

PARALLEL

$$\frac{1}{\frac{1}{12} + \frac{1}{24}} = \frac{1}{\frac{3}{24}} = 8 \text{ mH}$$



$$L_{eq} = L_1 + 8 = 12 \text{ mH}$$

$$v = L \frac{di}{dt} \Rightarrow 4.8 \cos(2000t) = L_{eq} \cdot B \cdot 2000 \cos(2000t)$$

$$\Rightarrow B = \frac{4.8}{2000 \cdot 12 \cdot 10^{-3}} = \frac{4.8}{24} = 0.2 \text{ A}$$

$$B = 200 \text{ mA}$$