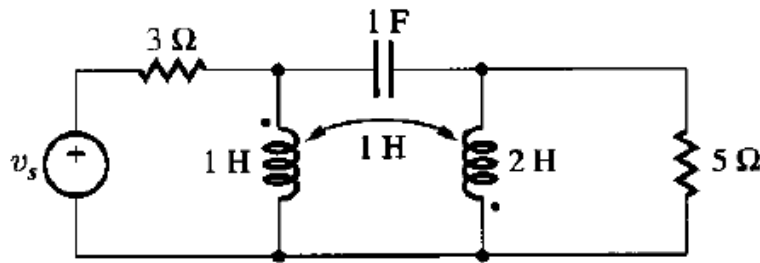


**15.41** Apply  $s$ -domain loop analysis to the circuit of Figure P15.41 to find the currents through the resistances and the capacitance as functions of  $V_s$  for  $\omega = 1$  rad/s.



**Figure P15.41**

primero debemos analizar la polaridad de la tension mutua entre las bobinas

```
clc, clear, close all
format short g
vf = 10;
w = 1;
z1= 3;
z2 = j*w*1;
z3 = -1/(j*w*1);
z4 = j*w*2;
z5 = 5;
```

realizamos un analisis de mallas

```
syms i1 i2 i3
ec1 = simplify(-10+40*i1+z2*i1==0)
```

$$ec1 = i_1 = \frac{400}{1601} - \frac{10}{1601} i$$

```
ec2 = simplify(z2*i2+z3*i2-z5*i3==0)
```

$$ec2 = 5 i_3 = 2 i_2 i$$

```
ec3 = simplify(z4*i3-z5*i2==0)
```

$$ec3 = 5 i_2 = 2 i_3 i$$

resolvemos el sistema y obtenemos las corrientes solicitadas

$$i_1 = 3226.52 + j*285.78$$

$$i1 = 3226.5 + 285.78i$$

$$i2 = -1122.57 + j*1203.81$$

$$i2 = -1122.6 + 1203.8i$$

$$i3 = 680.70 - j*3$$

$$i3 = 680.7 - 3i$$