

Figure 3.1
RL network

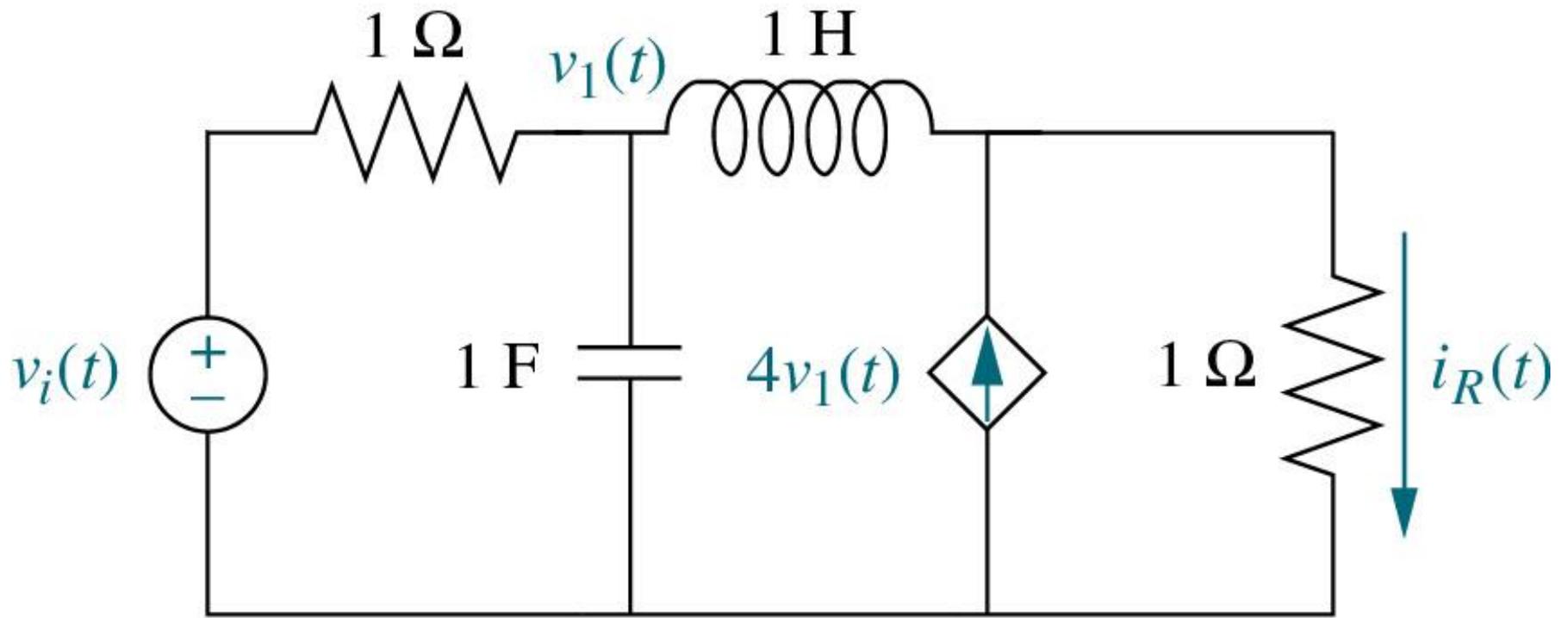


Figure 3-2 (p. 164)

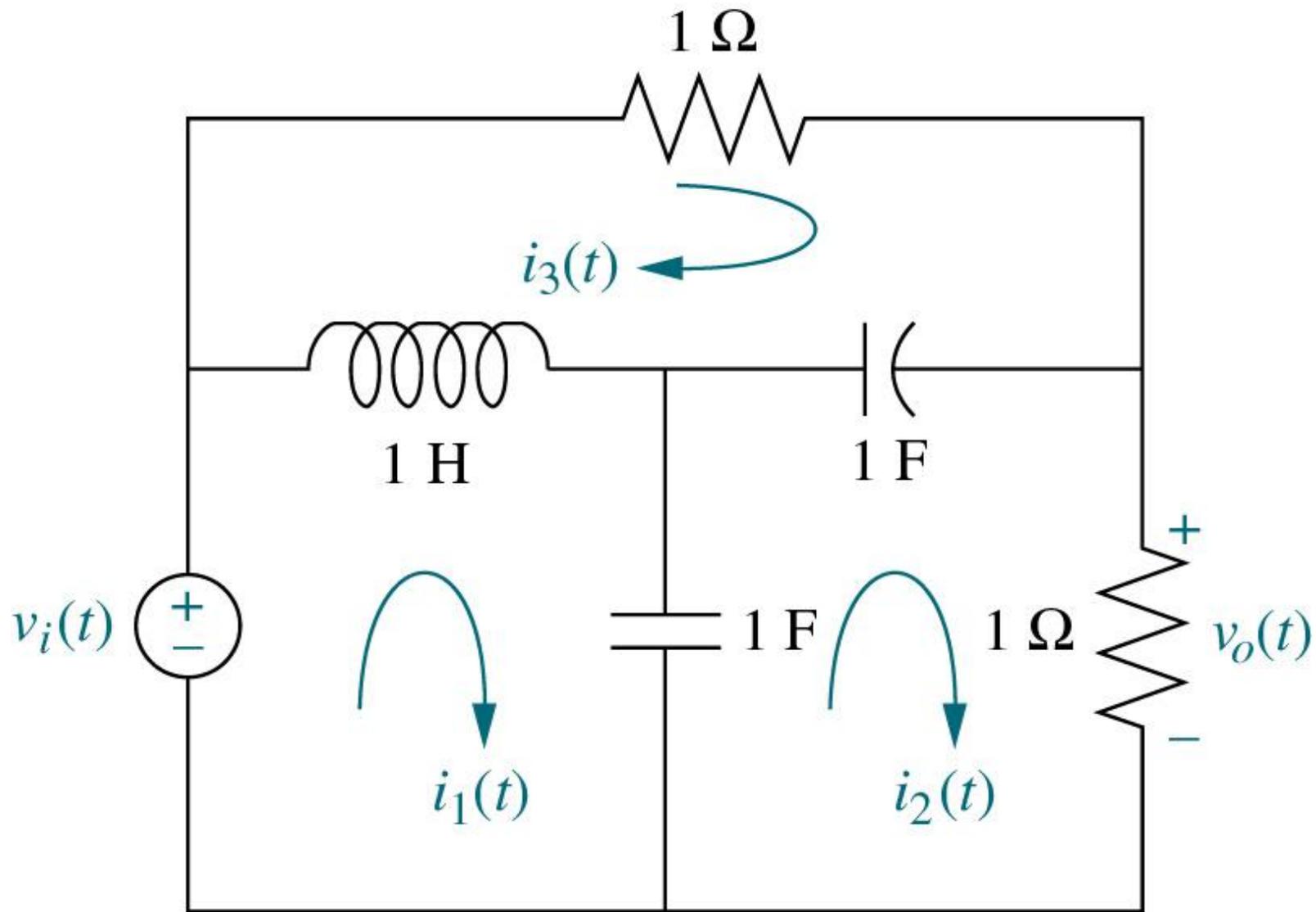


Figure 3-3 (p. 164)

Figure 3.4

Block diagram of a mass and damper

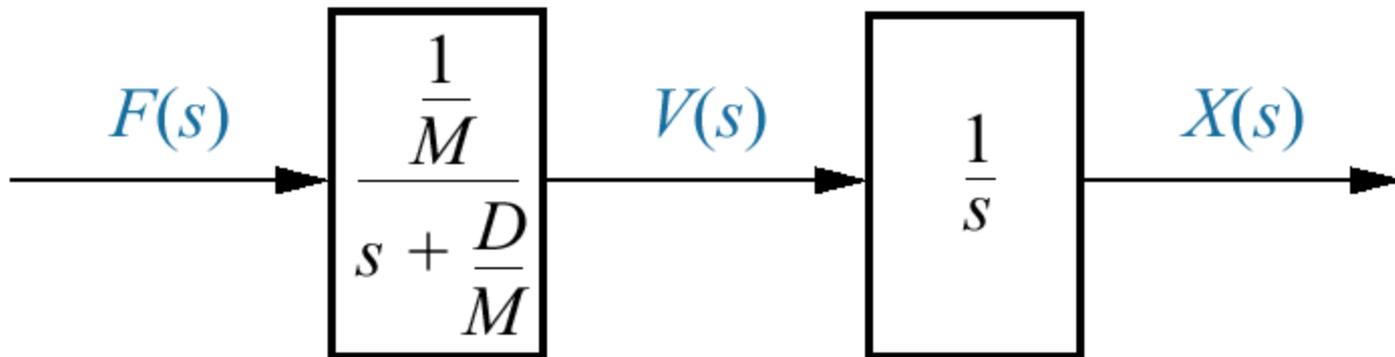
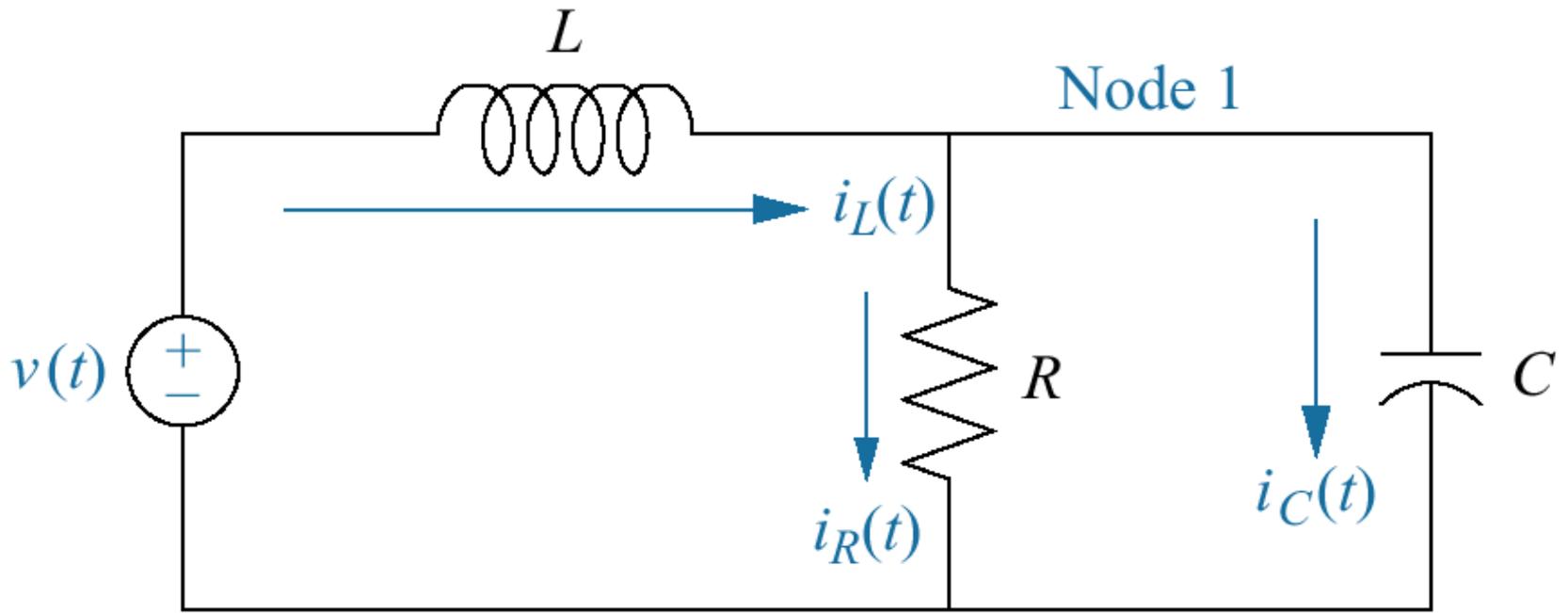


Figure 3.5

Electrical network for representation in state space



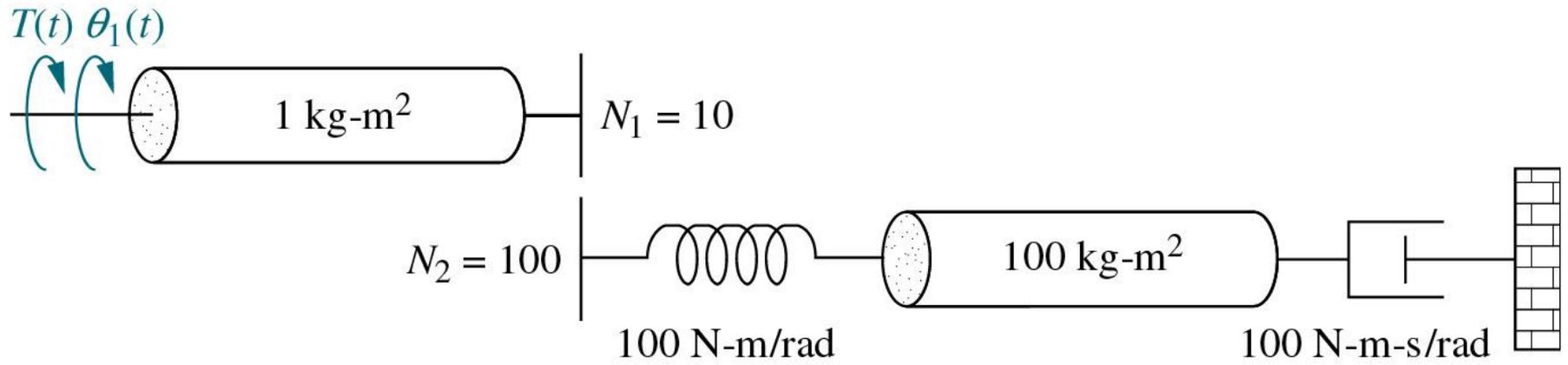


Figure 3-6 (p. 165)

Figure 3.7
Translational
mechanical system

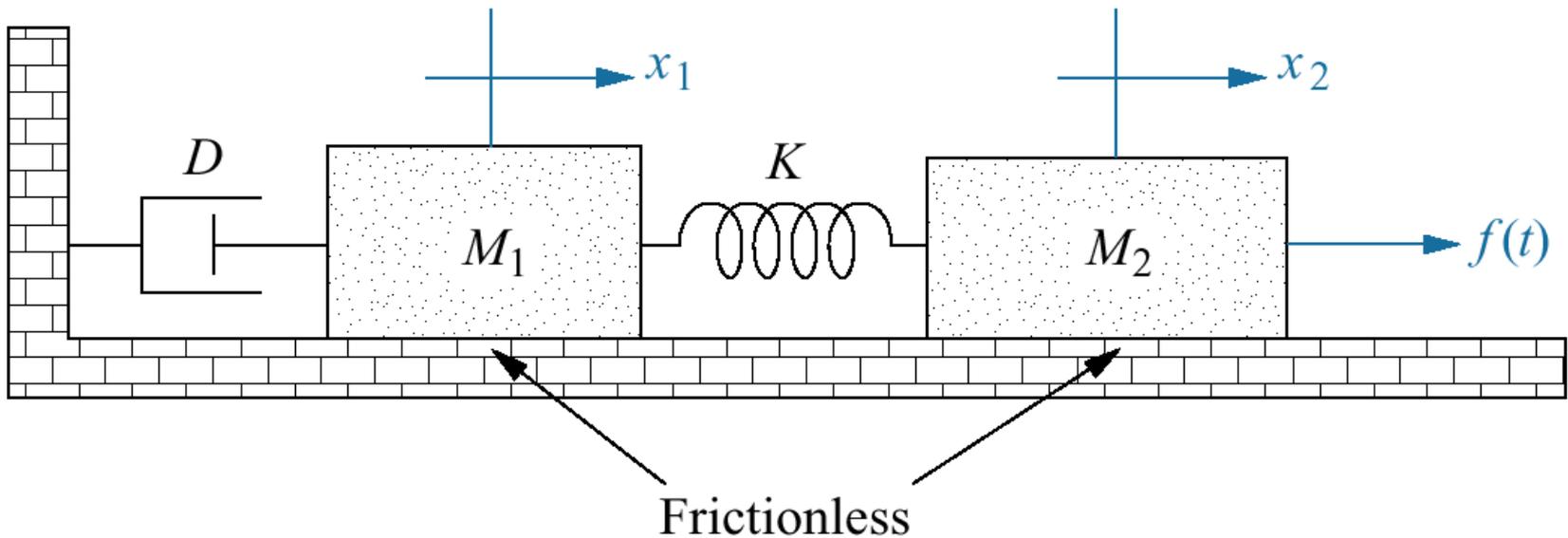


Figure 3.8

Electric circuit
for Skill-Assessment
Exercise 3.1

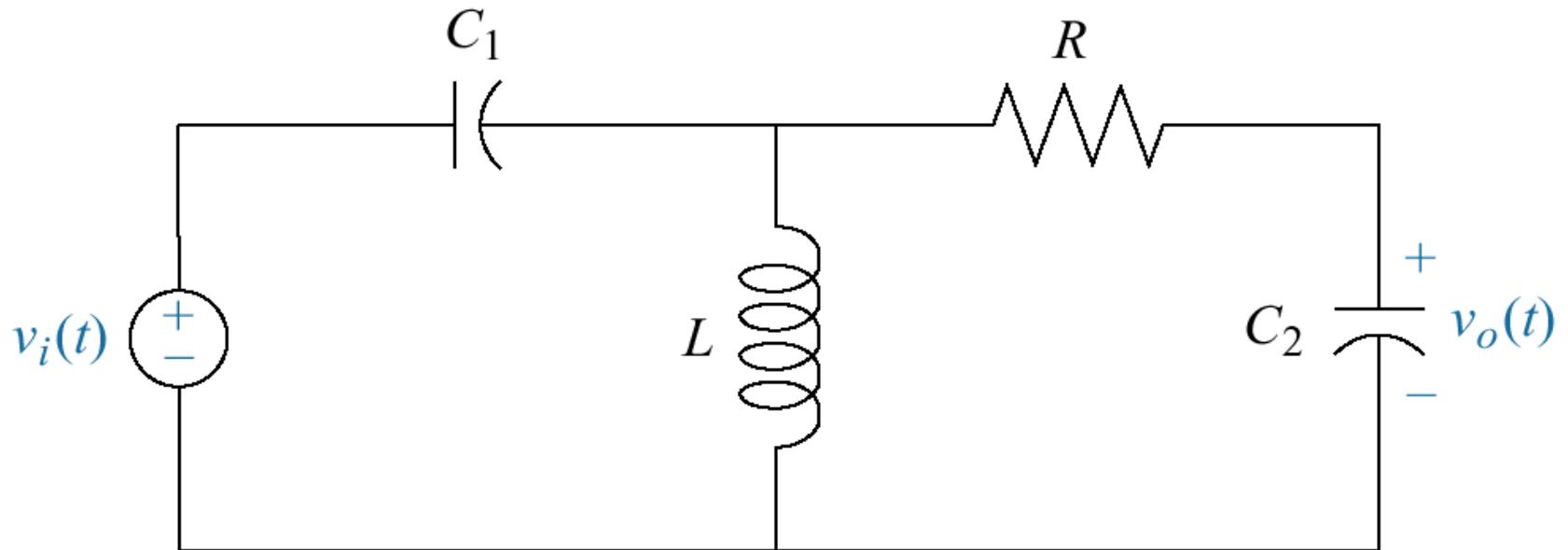
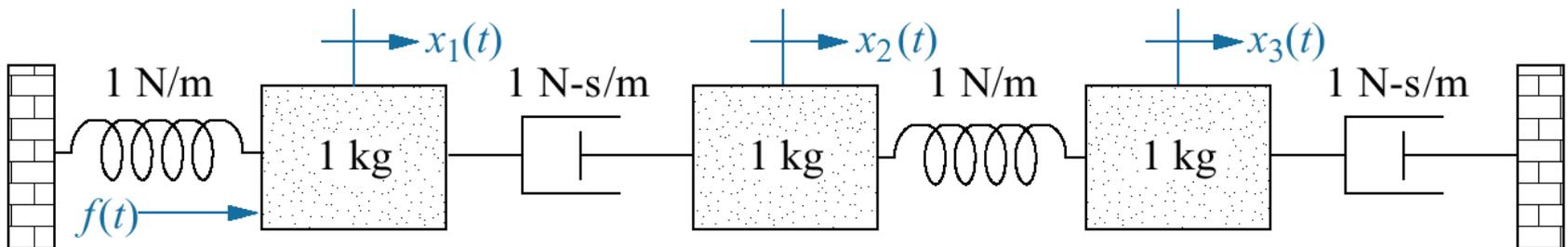
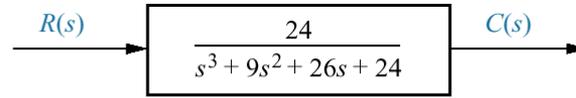
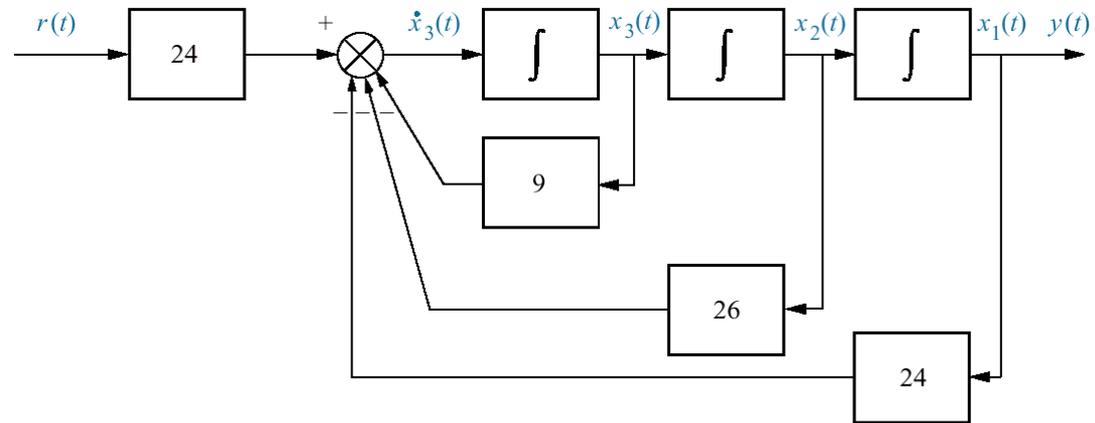


Figure 3.9
Translational
mechanical system
for Skill-Assessment
Exercise 3.2





(a)

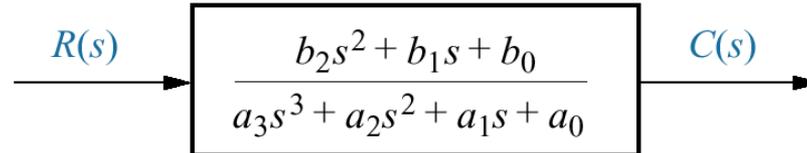


(b)

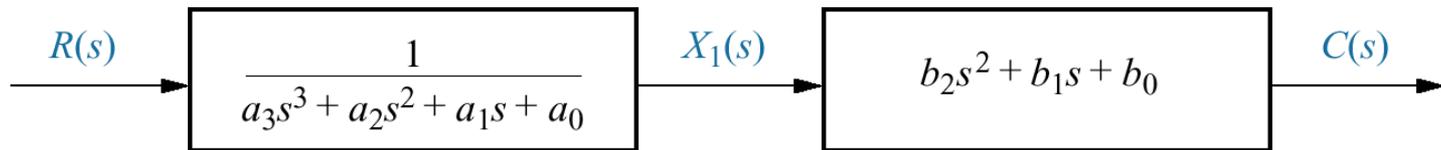
Figure 3.10

a. Transfer function;
 b. equivalent block diagram showing phase-variables.
 Note: $y(t) = c(t)$

Figure 3.11
Decomposing a
transfer function

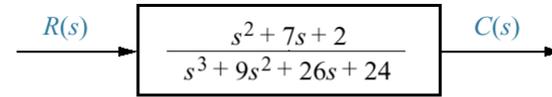


(a)

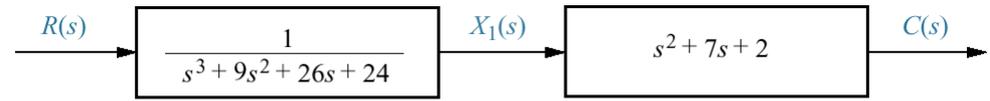


Internal variables:
 $X_2(s), X_3(s)$

(b)

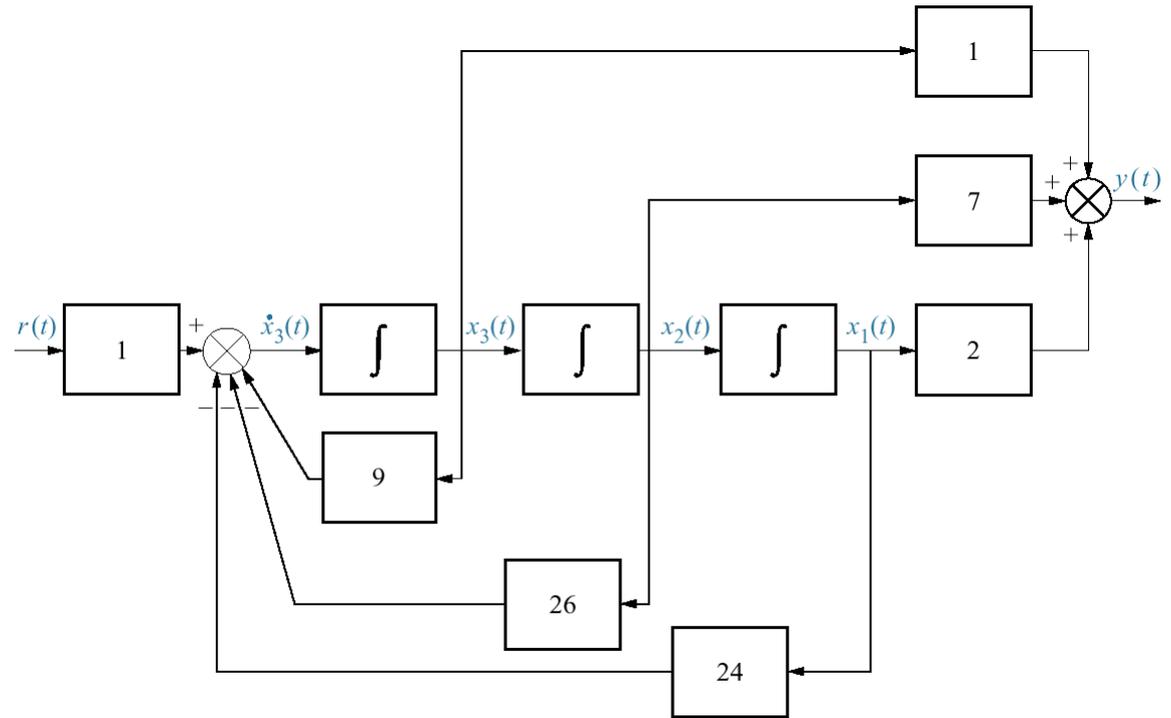


(a)



Internal variables:
 $X_2(s), X_3(s)$

(b)



(c)

Figure 3.12

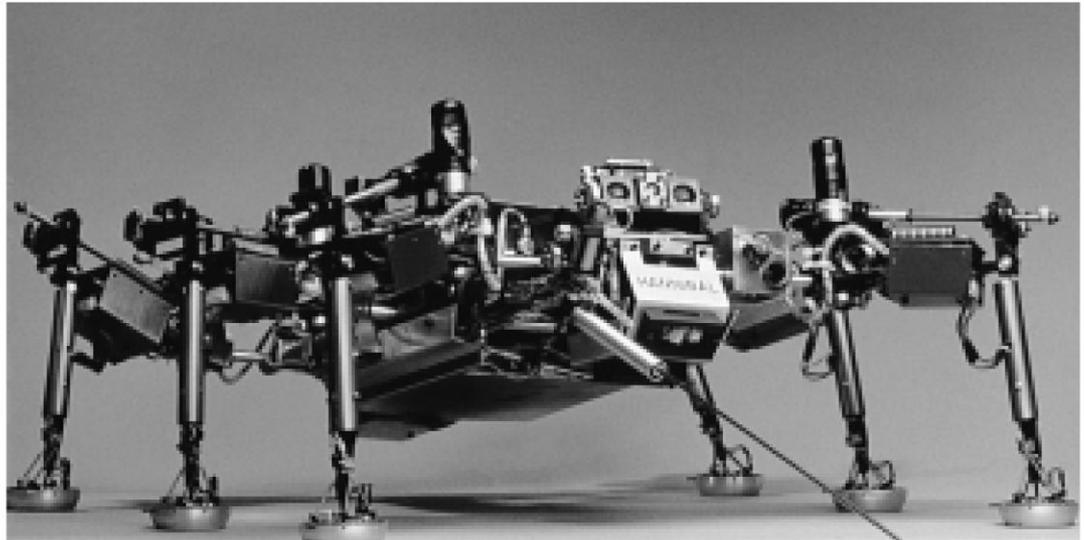
a. Transfer function;

b. decomposed transfer function;

c. equivalent block diagram. Note:
 $y(t) = c(t)$

Figure 3.13

Walking robots, such as Hannibal shown here, can be used to explore hostile environments and rough terrain, such as that found on other planets or inside volcanoes.



© Bruce Frisch/S.S./Photo Researchers

Figure 3.14

- a. Simple pendulum;
- b. force components of Mg ;
- c. free-body diagram

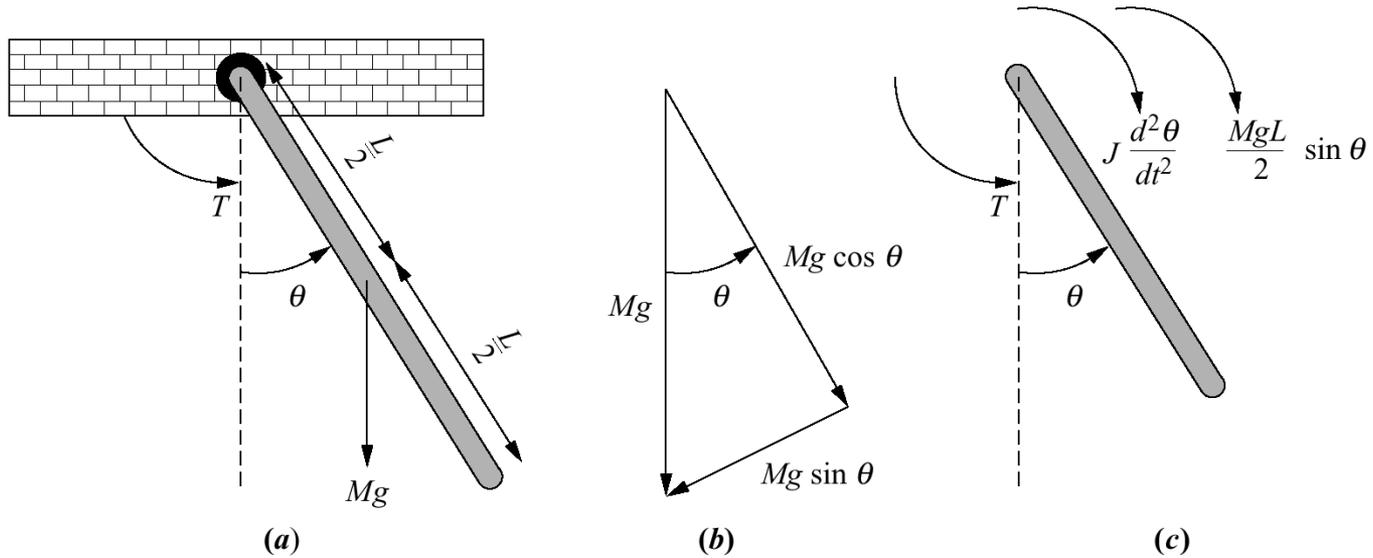


Figure 3.15

Nonlinear translational
mechanical system
for Skill-Assessment
Exercise 3.5

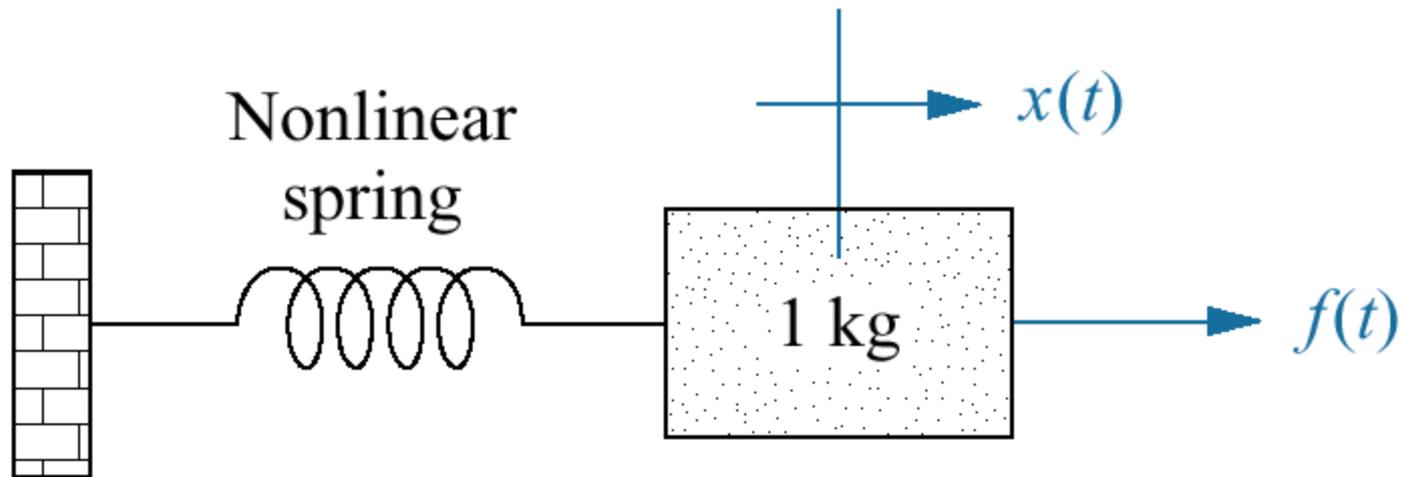


Figure 3.16

Pharmaceutical drug-level concentrations in a human

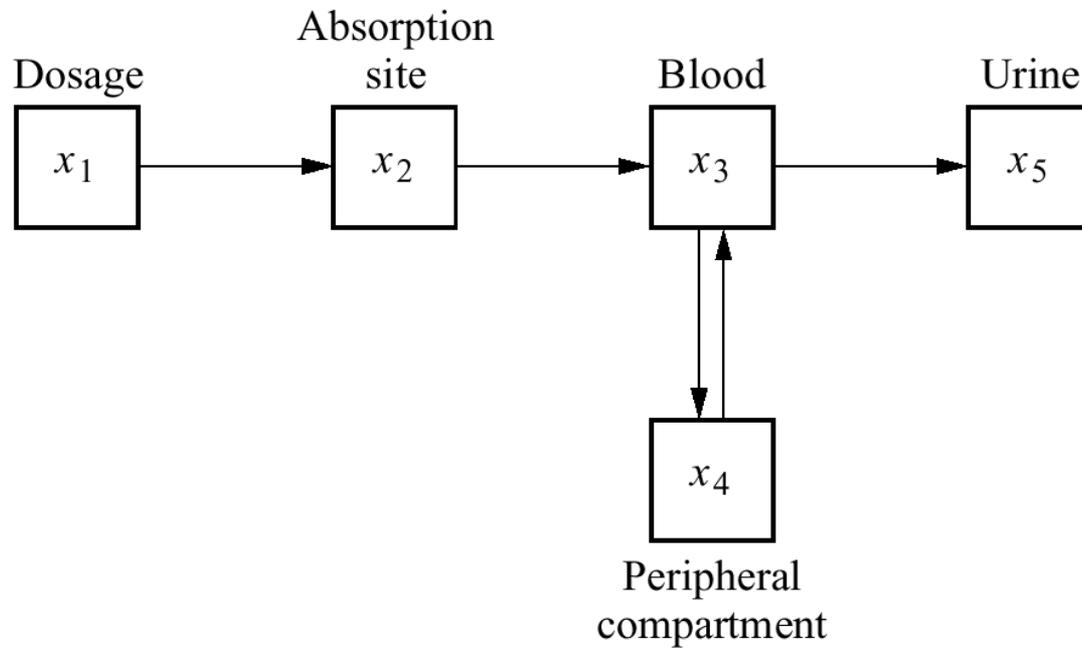
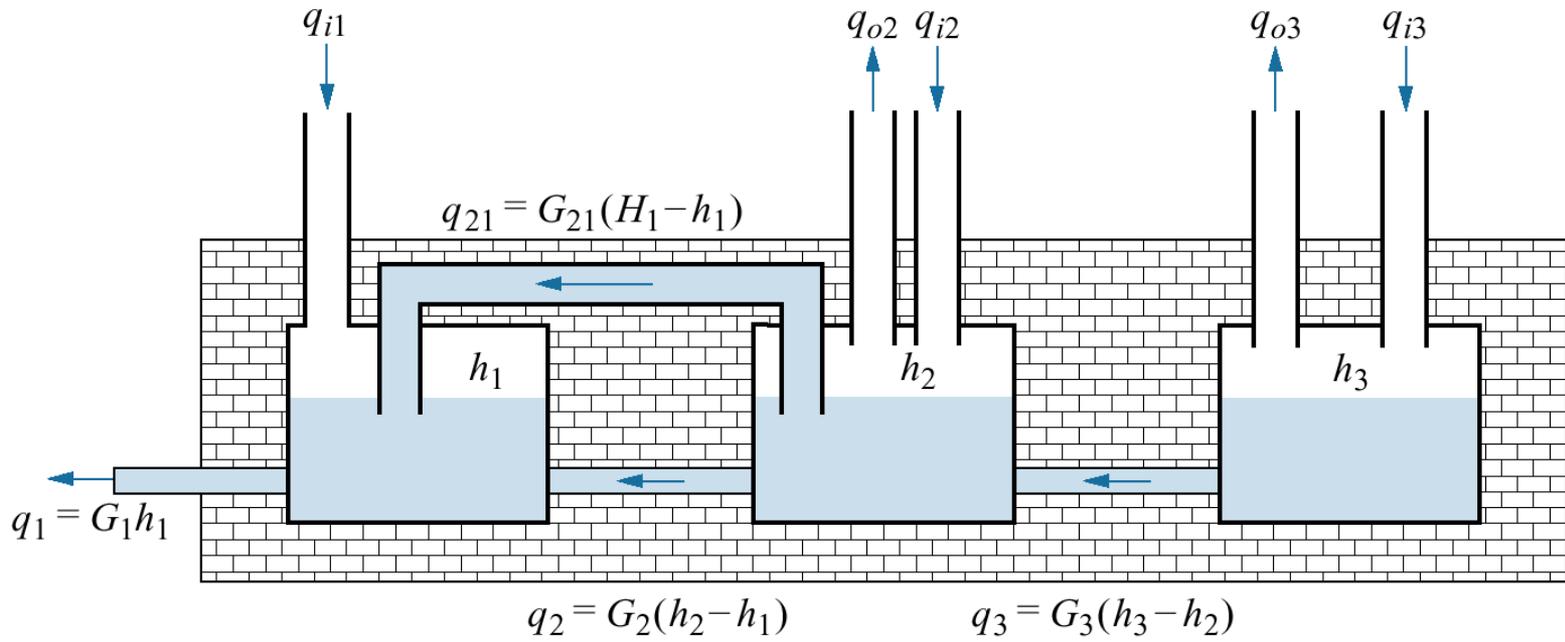


Figure 3.17
Aquifer system model



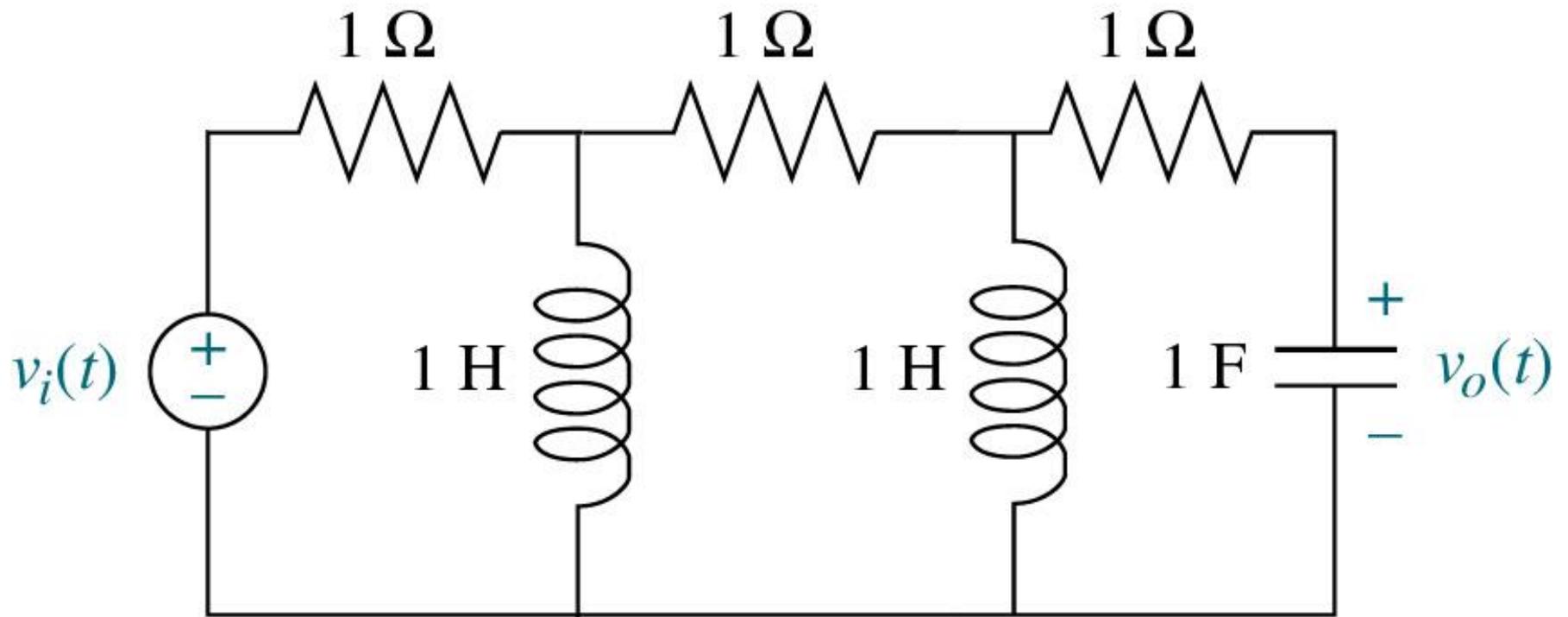
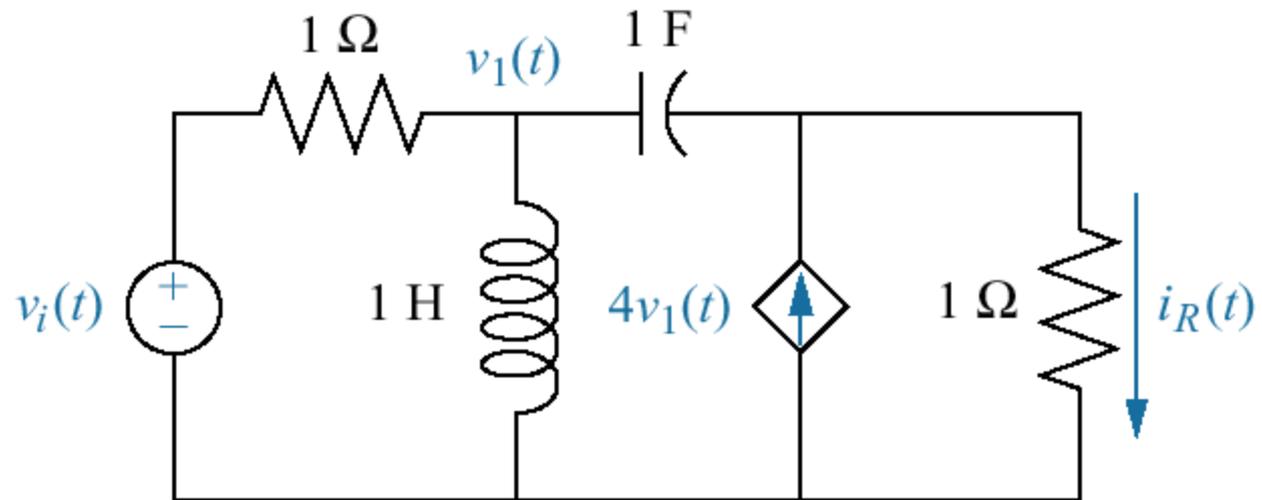


Figure P3-1 (p. 163)

Figure P3.2



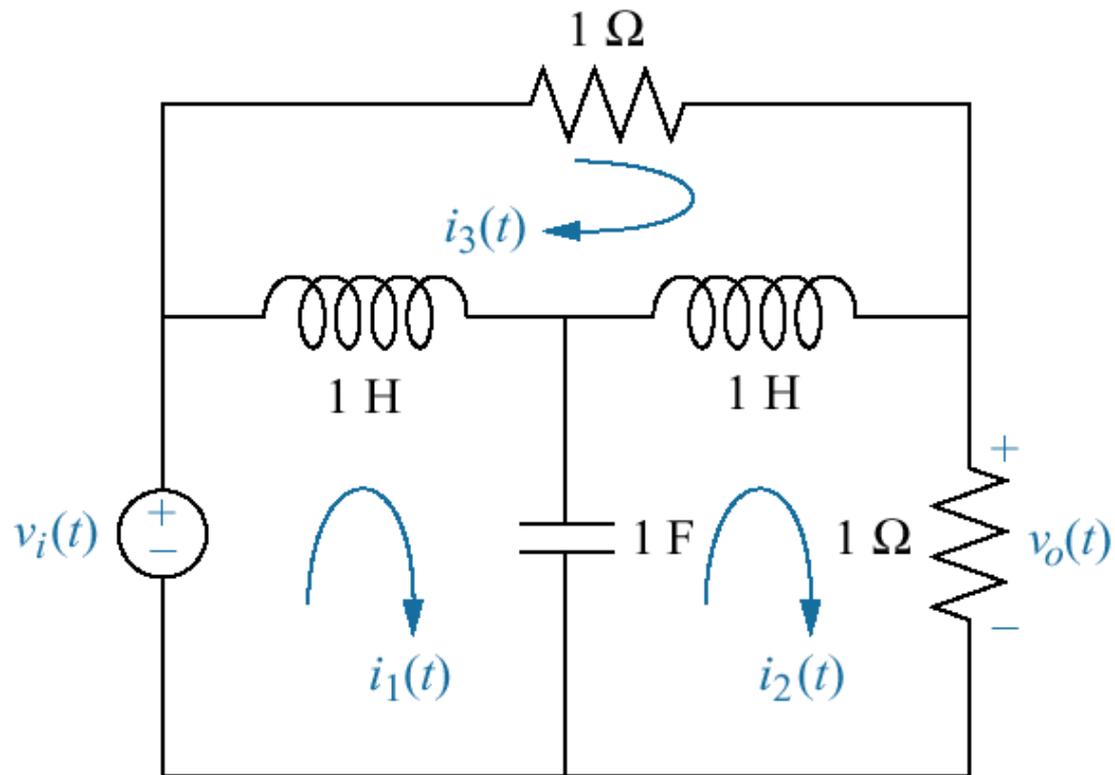
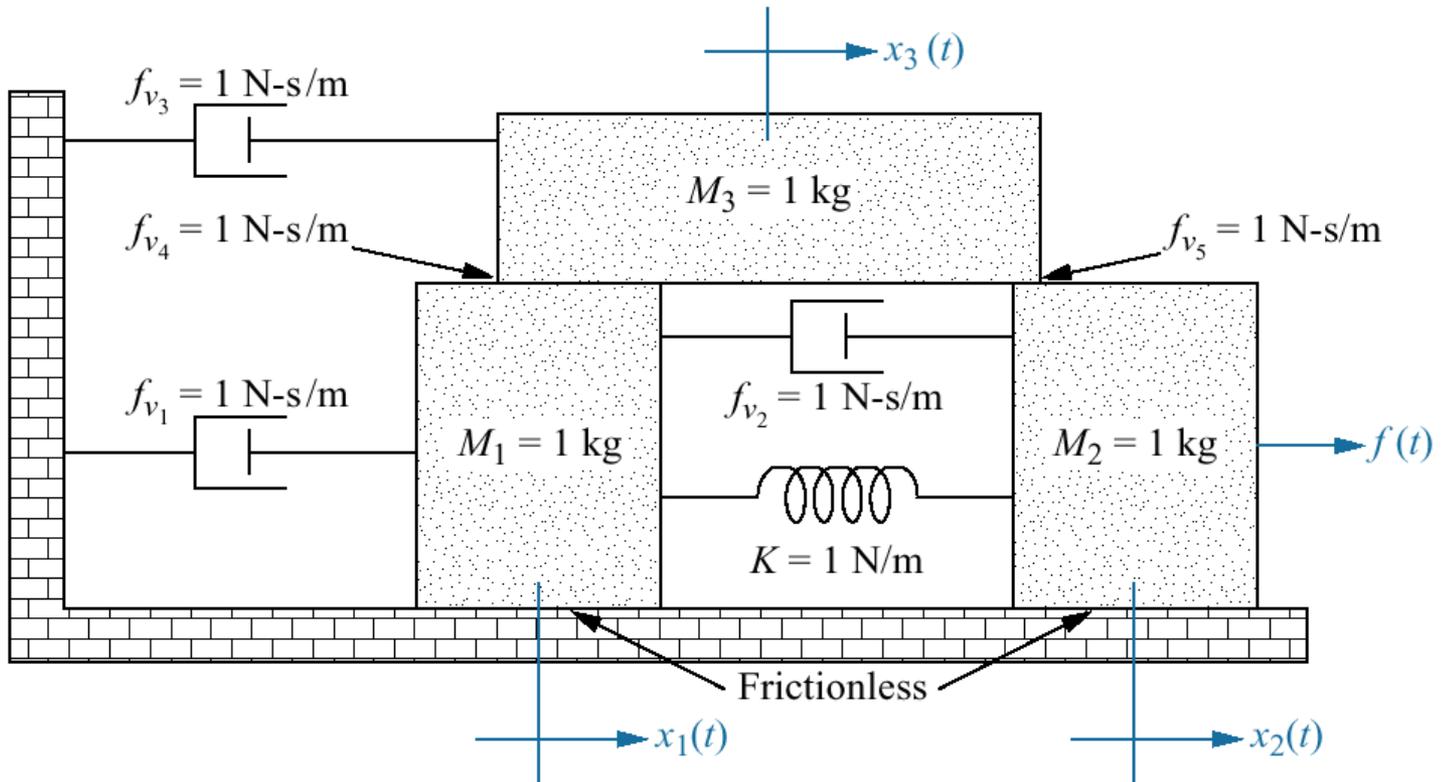


Figure P3.3

Figure P3.4



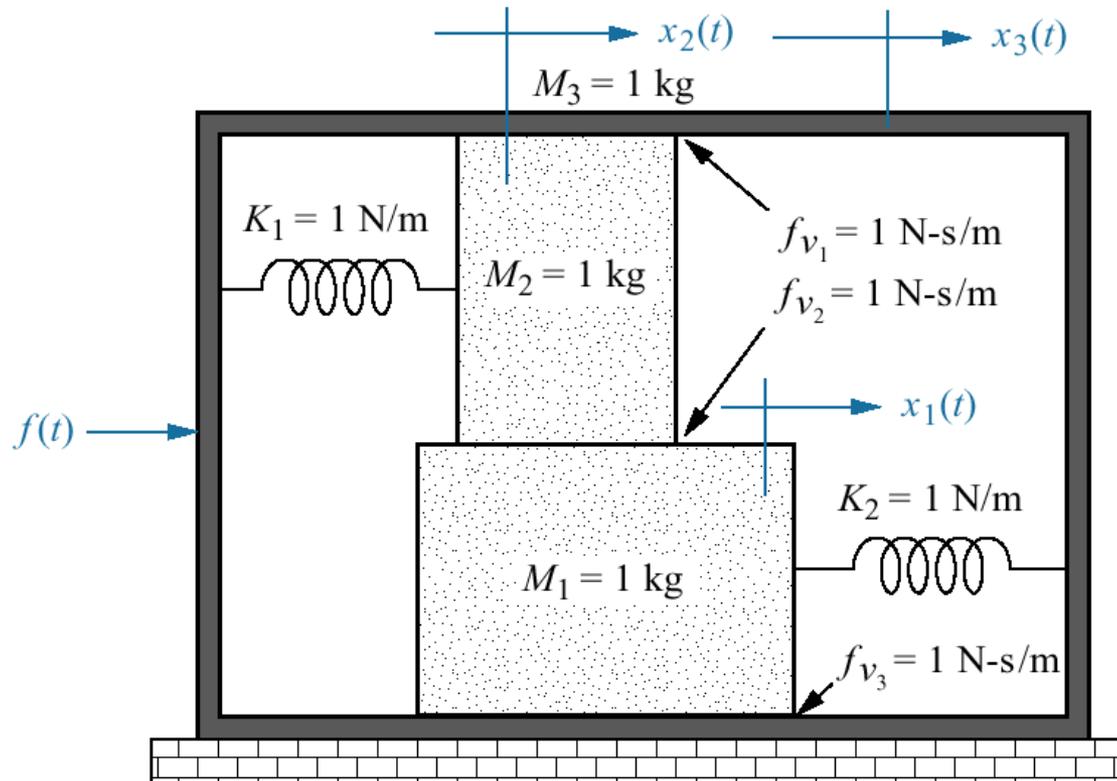


Figure P3.5

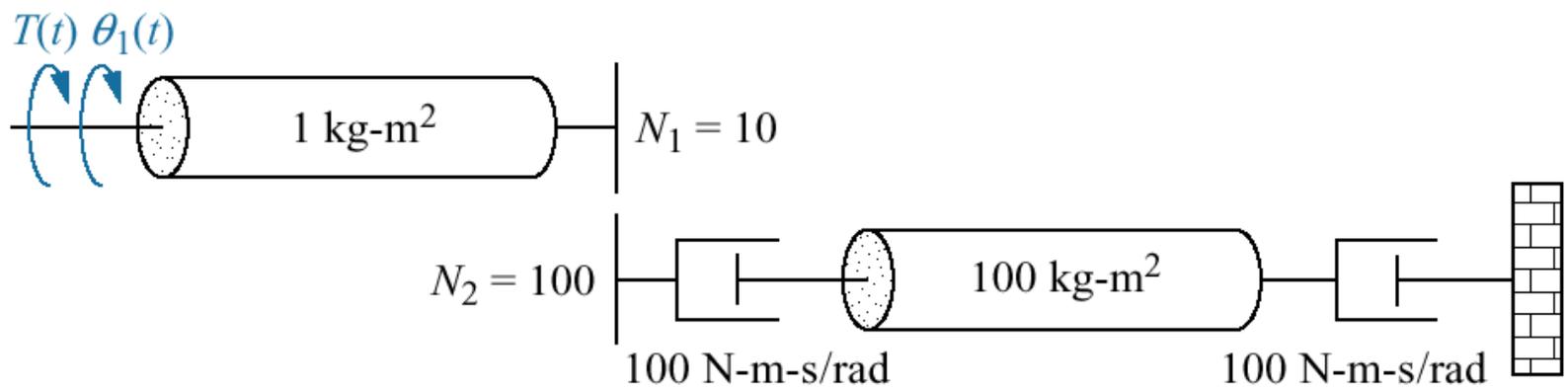


Figure P3.6

Figure P3.7

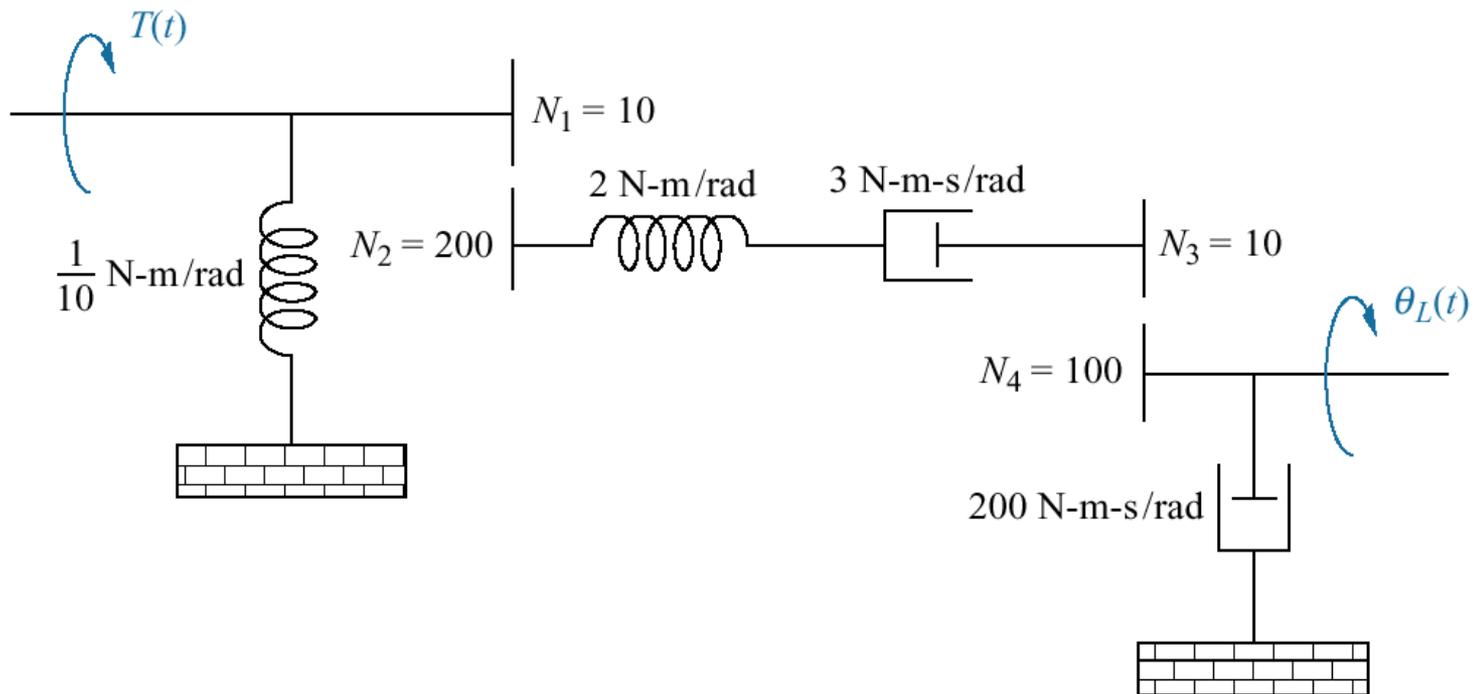
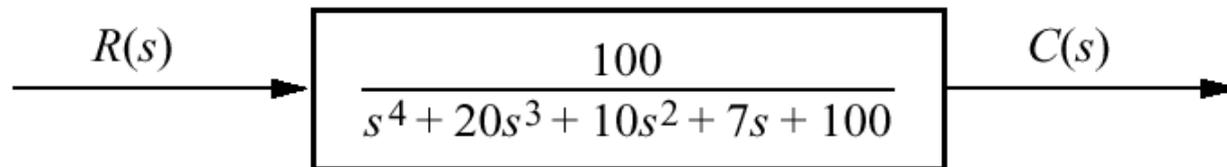
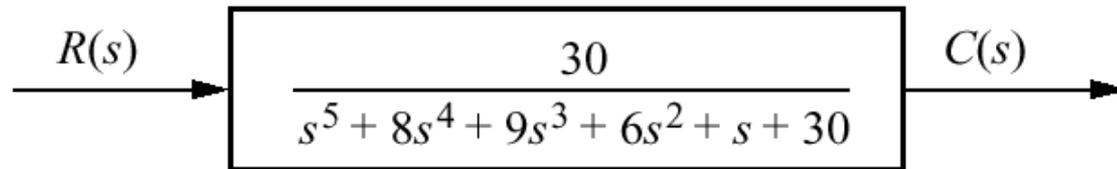


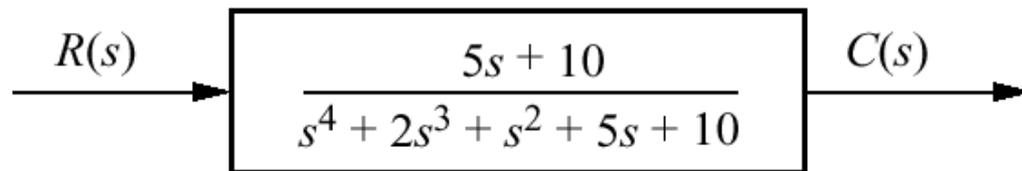
Figure P3.8



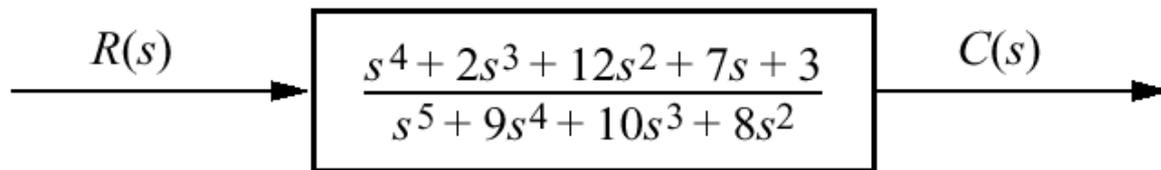
(a)



(b)



(a)



(b)

Figure P3.9

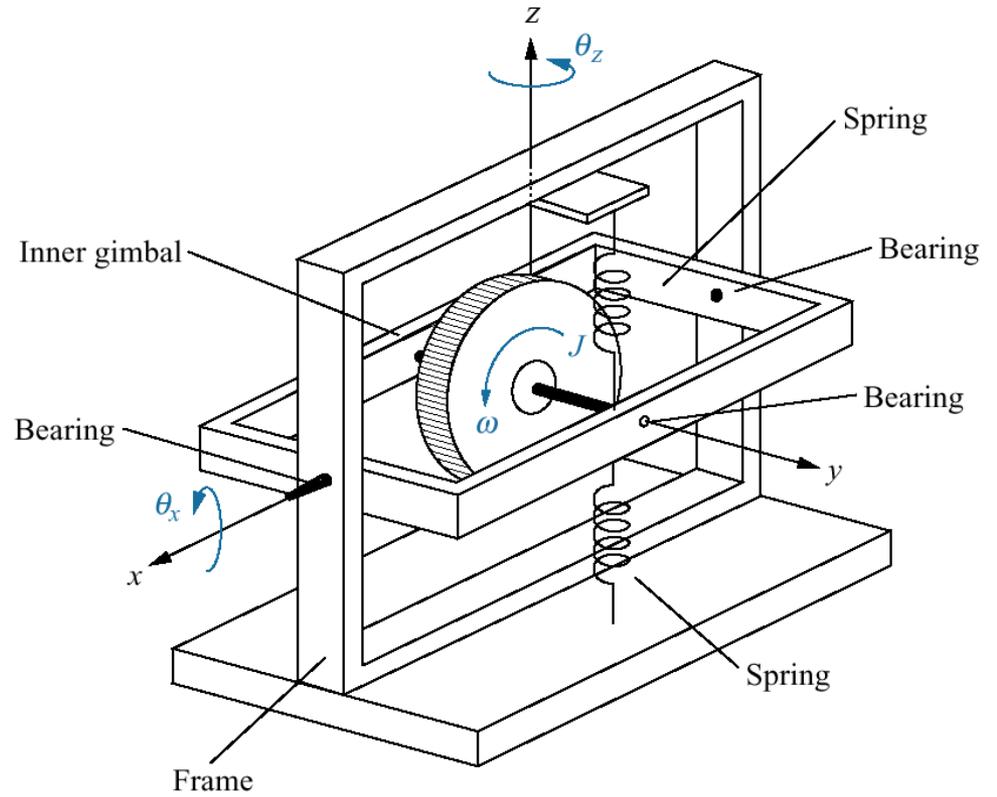


Figure P3.10
Gyro system

Figure P3.11
Missile

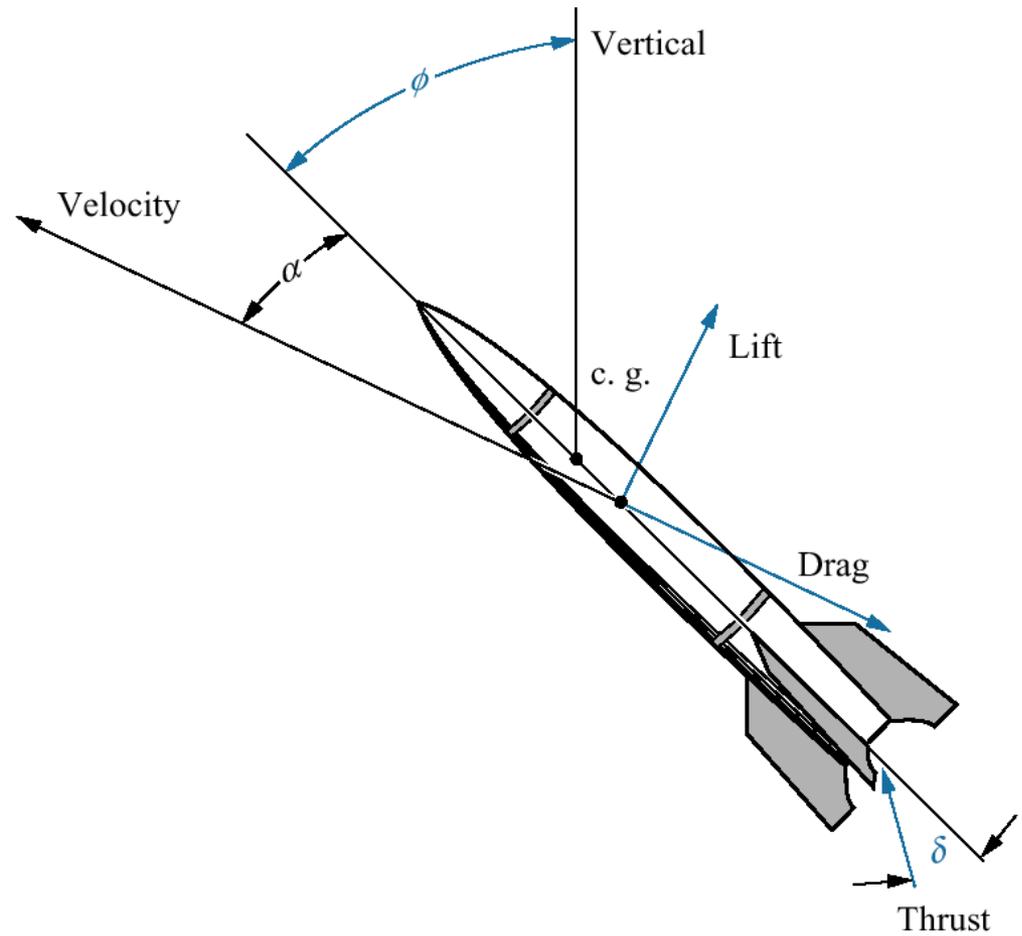


Figure P3.12

Motor and load

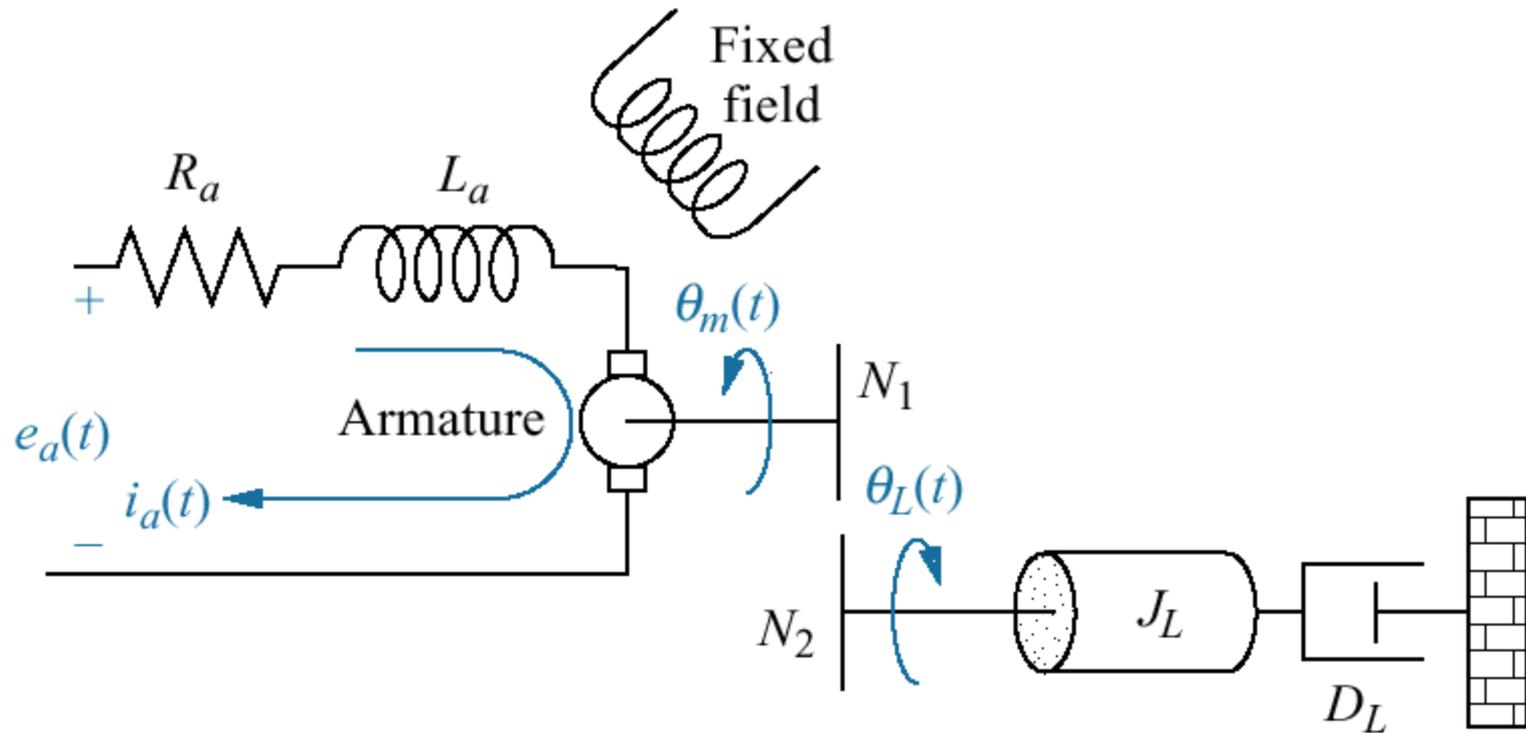


Figure P3.13

Nonlinear mechanical system

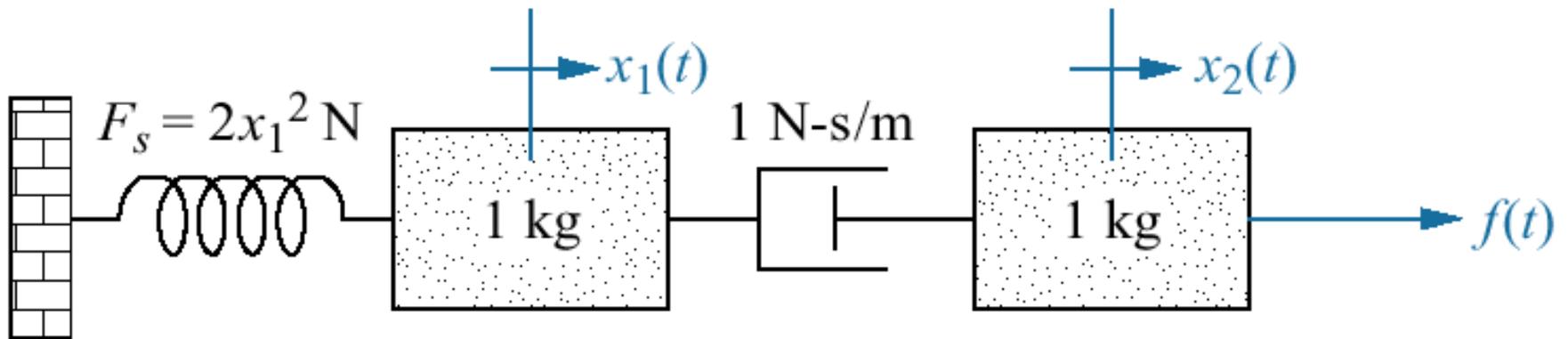


Figure P3.14

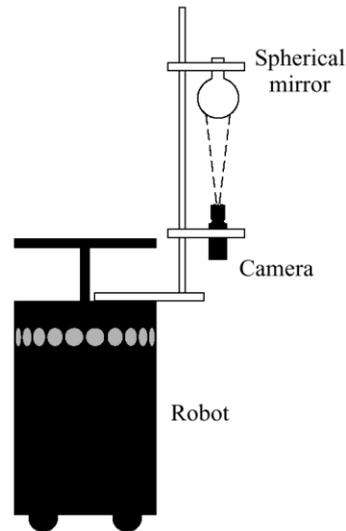
a. Robot with television imaging system

(©1992 IEEE);

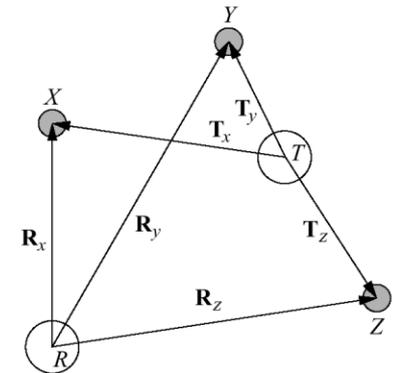
b. vector diagram showing concept behind image-based homing

(©1992 IEEE);

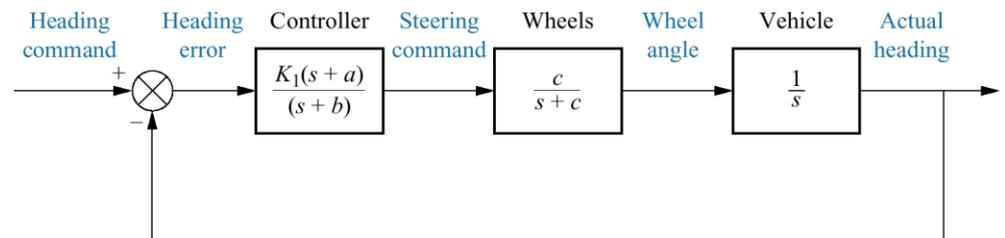
c. heading control system



(a)



(b)



(c)

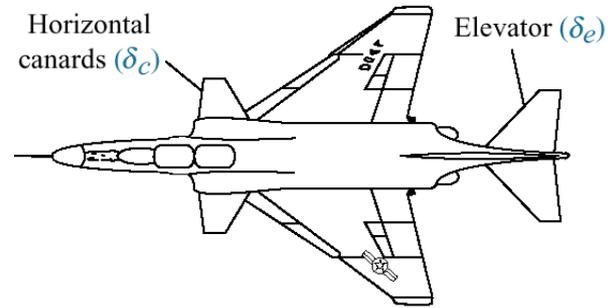
Figure P3.15

a. F4-E with canards

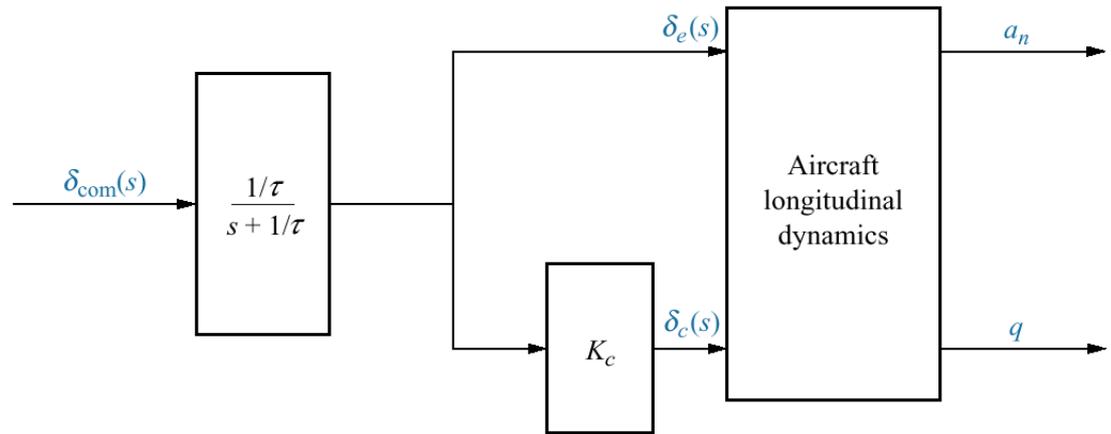
(© 1992 AIAA);

b. open-loop flight control system

(© 1992 AIAA)



(a)



(b)

Figure P3.16

Robotic manipulator
and target
environment

(©1997 IEEE)

