

Capítulo 3

Modelagem no Domínio do Tempo

Fig. 3.1
Circuito RL

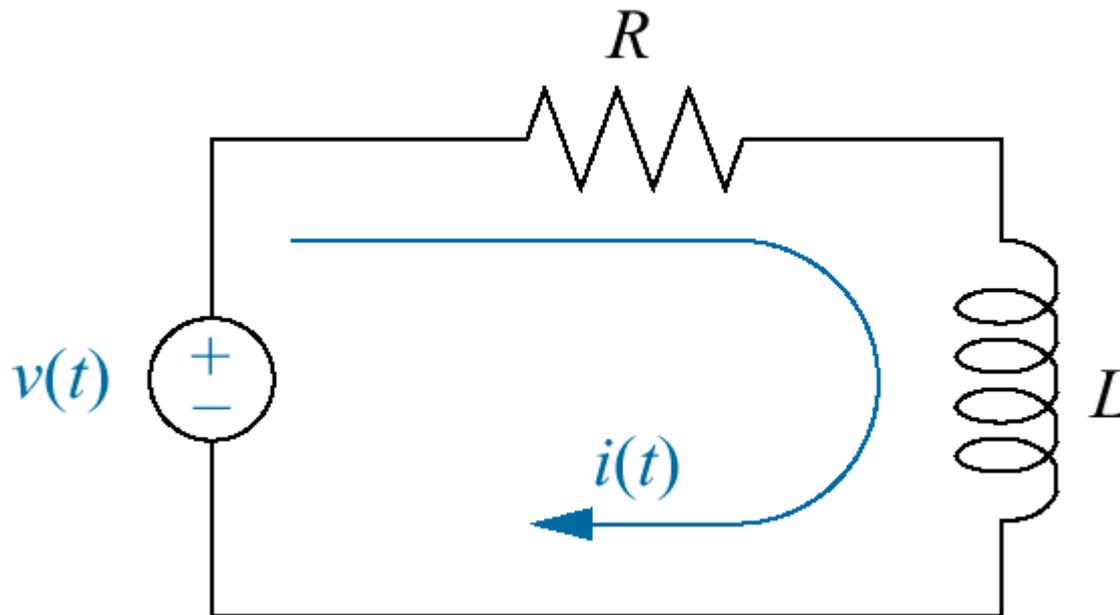


Fig. 3.2
Circuito *RLC*

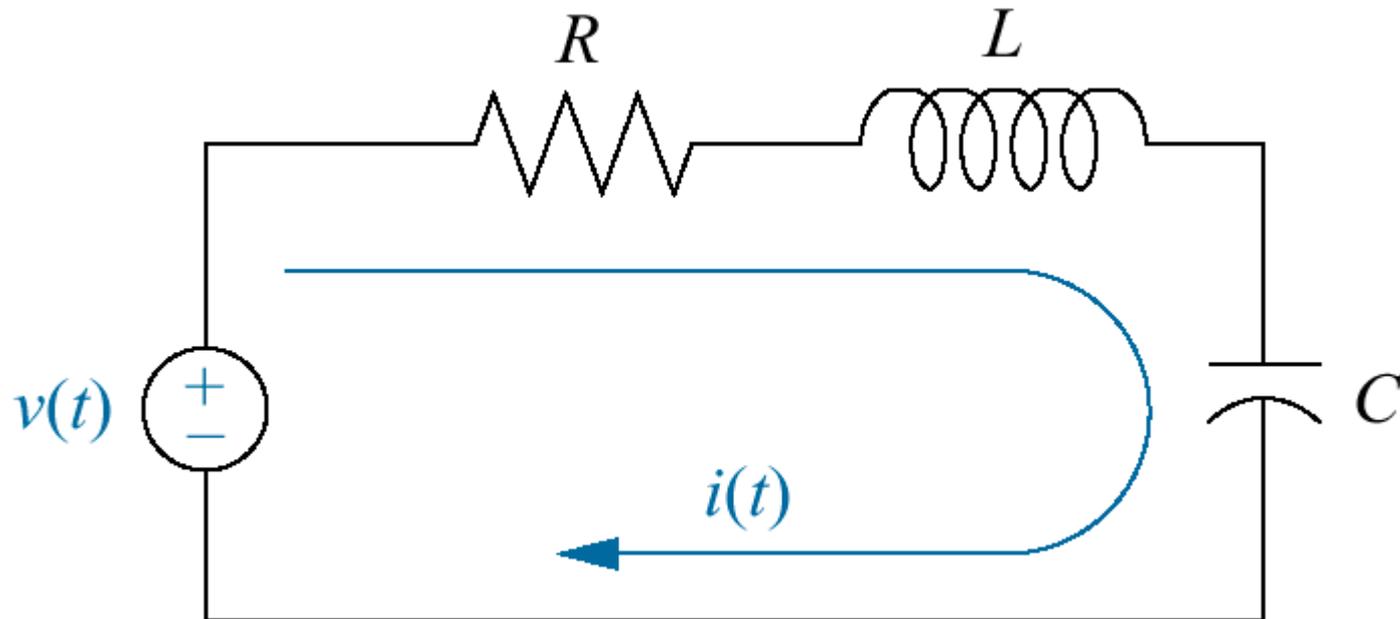


Fig. 3.3

Representação gráfica do espaço de estados e de um vetor de estado

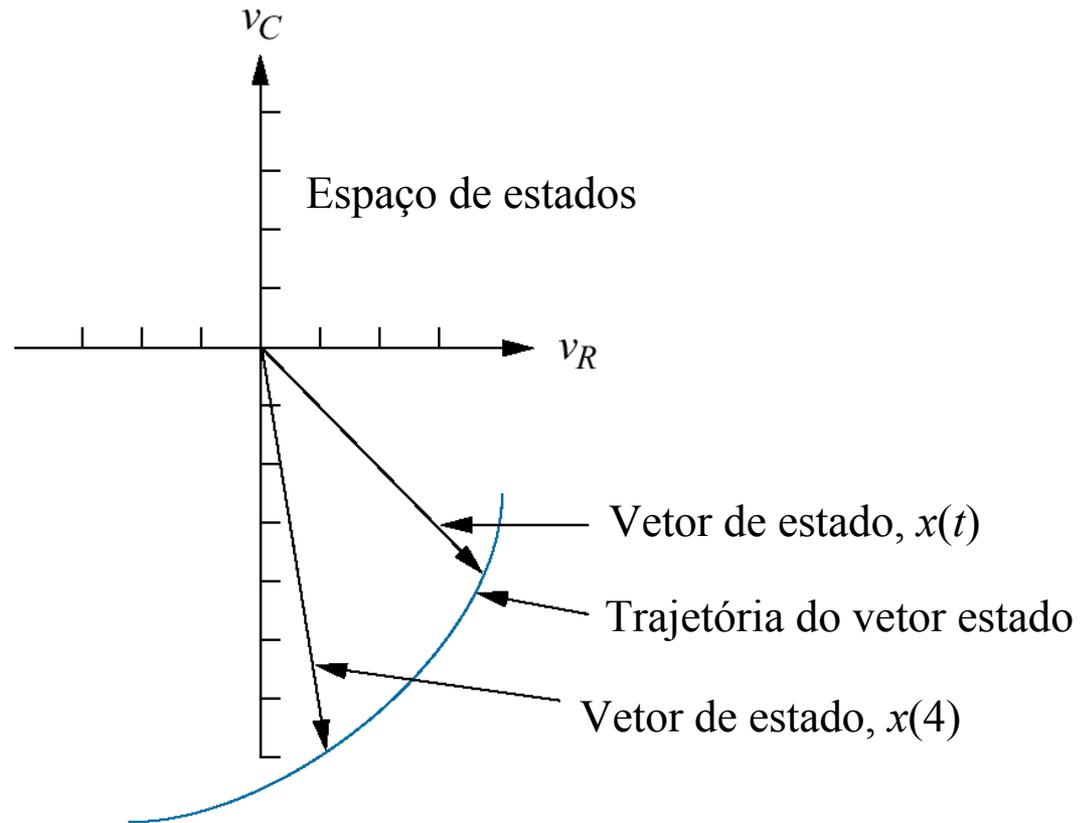


Fig. 3.4

Diagrama de blocos
de um sistema
massa e
amortecedor

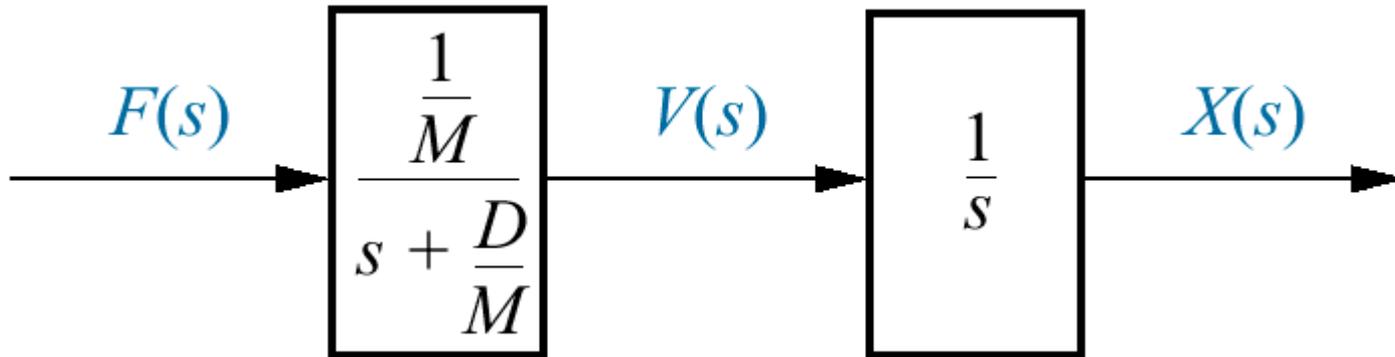


Fig. 3.5

Circuito elétrico para representação no espaço de estados

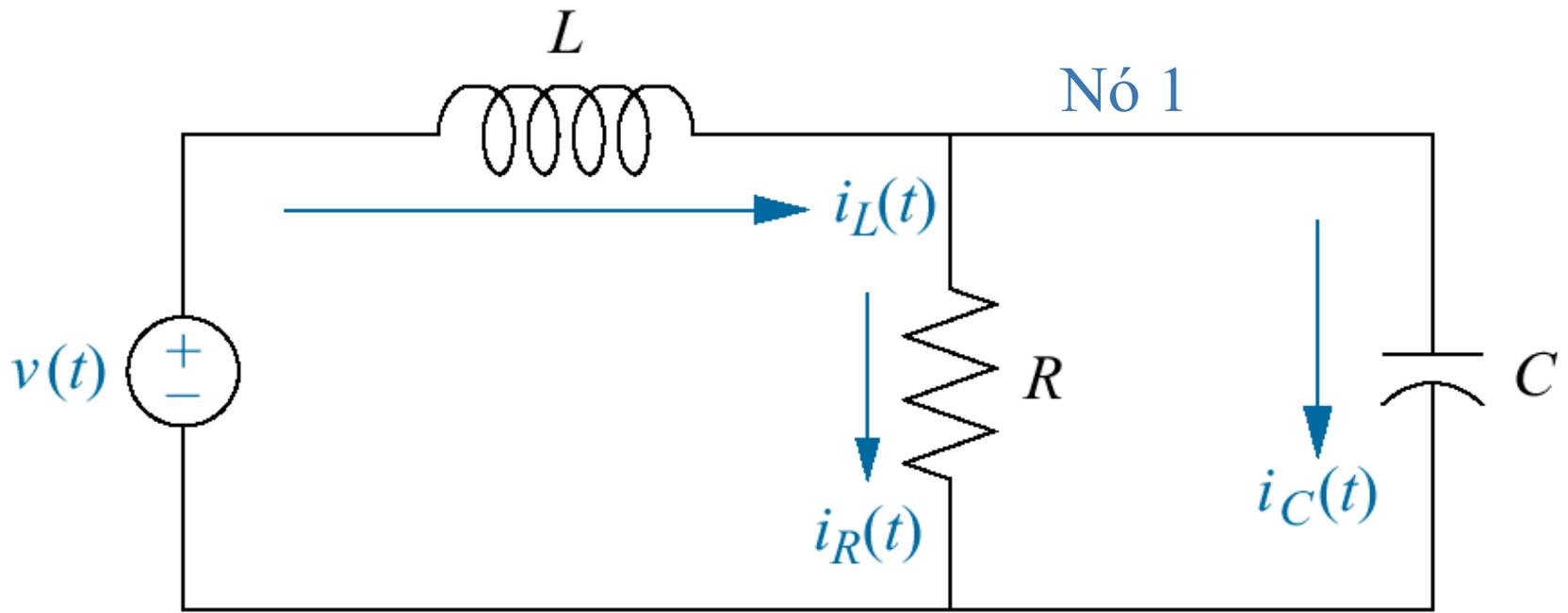


Fig. 3.6

Circuito elétrico para o Exemplo 3.2

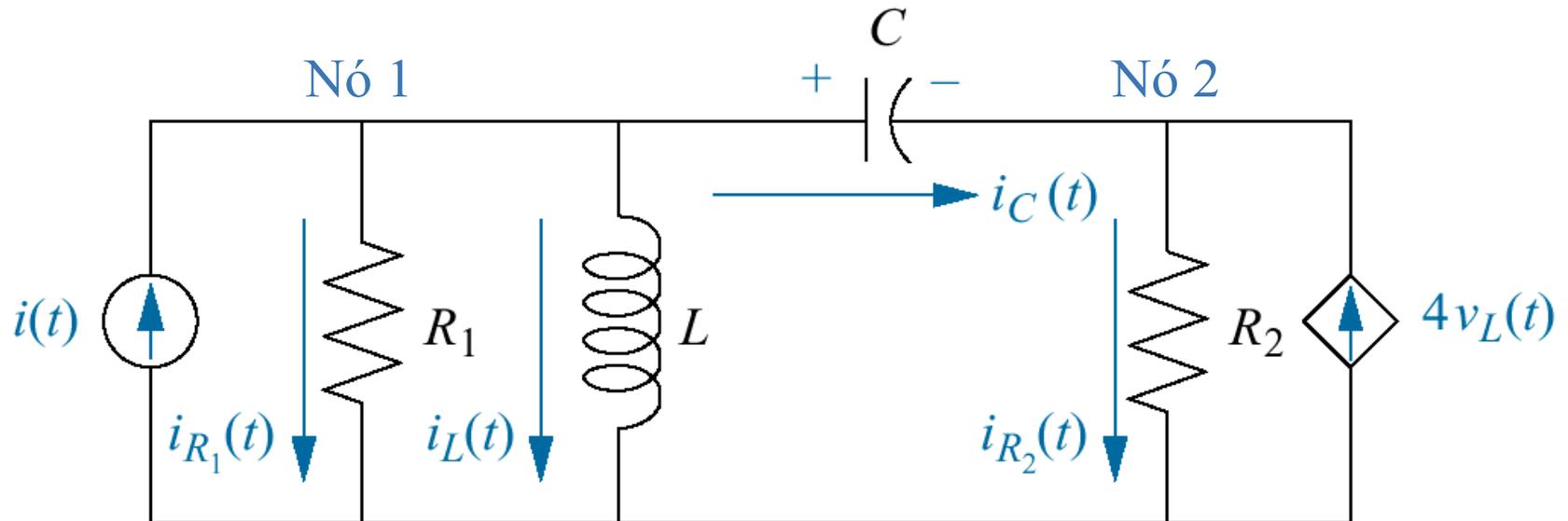


Fig. 3.7
 Sistema mecânico em
 translação

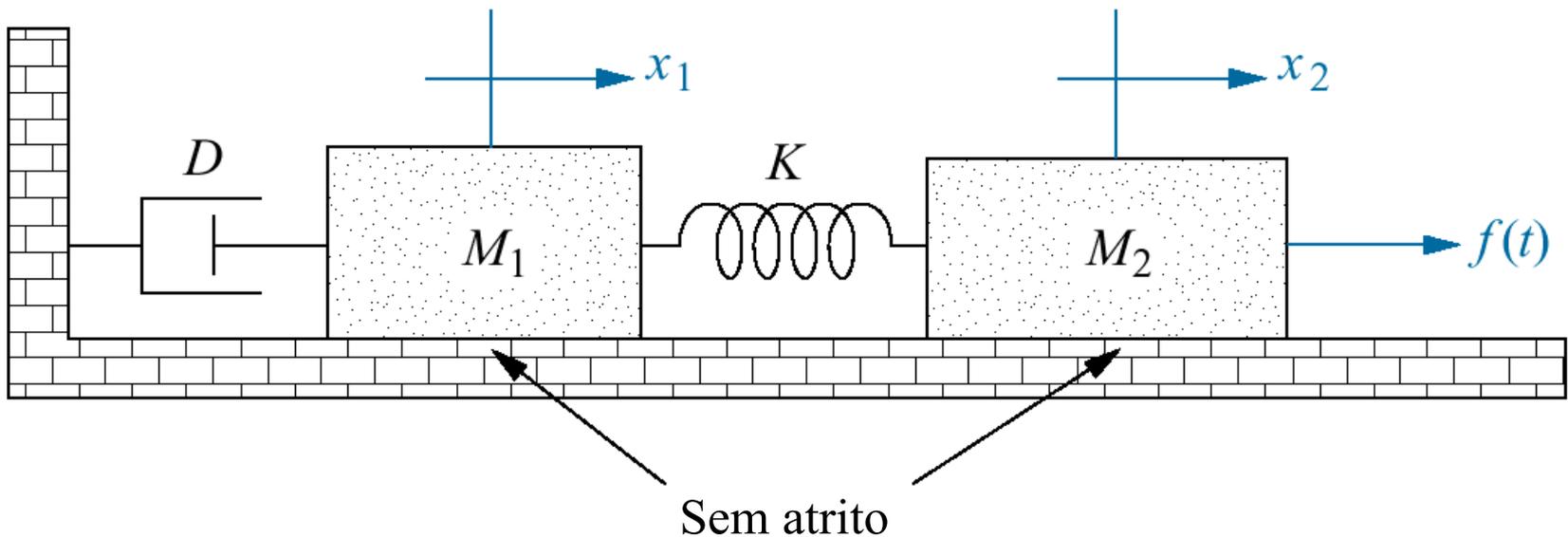


Fig. 3.8

Circuito elétrico para o
Exercício de Avaliação 3.1

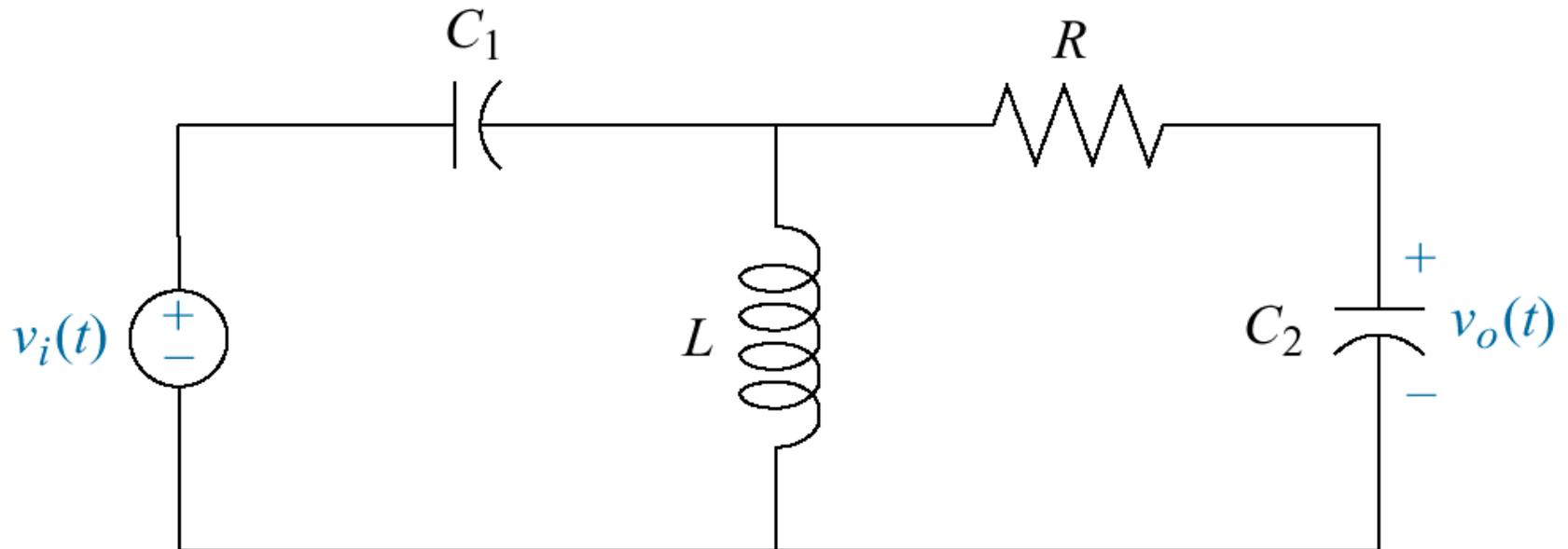


Fig. 3.9
Sistema mecânico em
translação
para o Exercício de
Avaliação 3.2

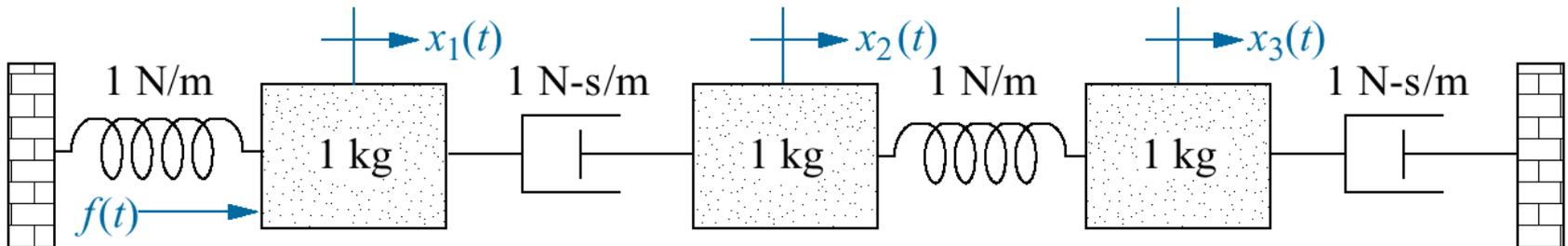


Fig. 3.10

a. Função de transferência;
 b. diagrama de blocos equivalente mostrando as variáveis de fase
 Nota: $y(t) = c(t)$

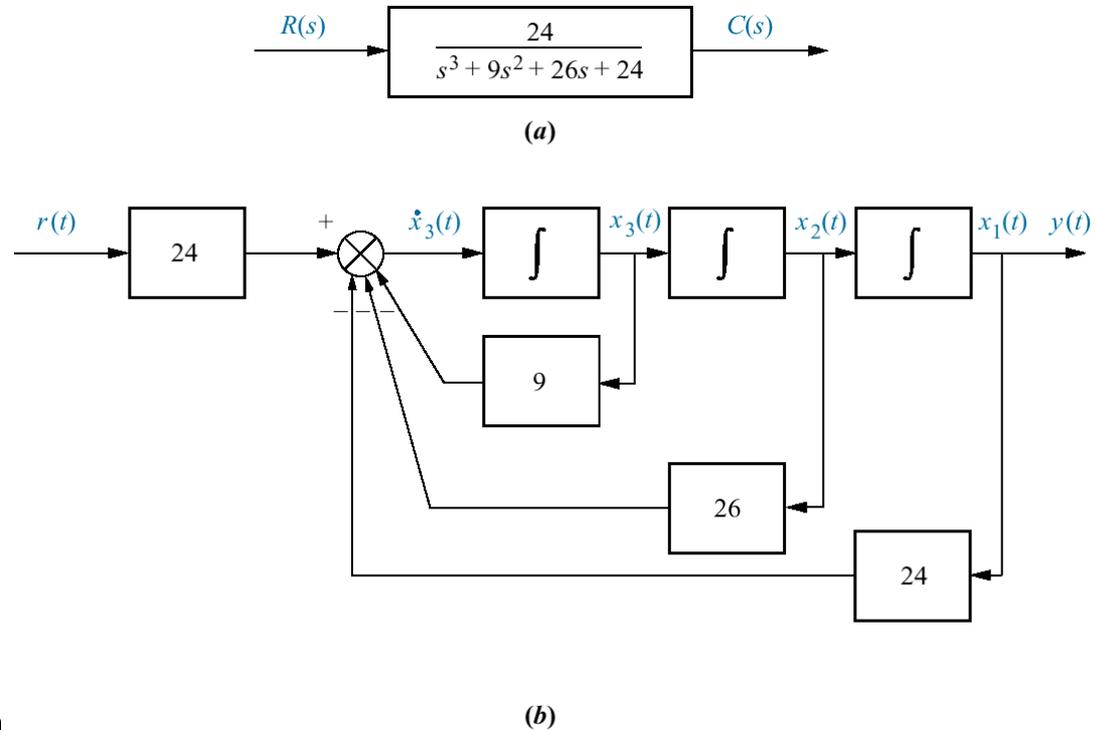
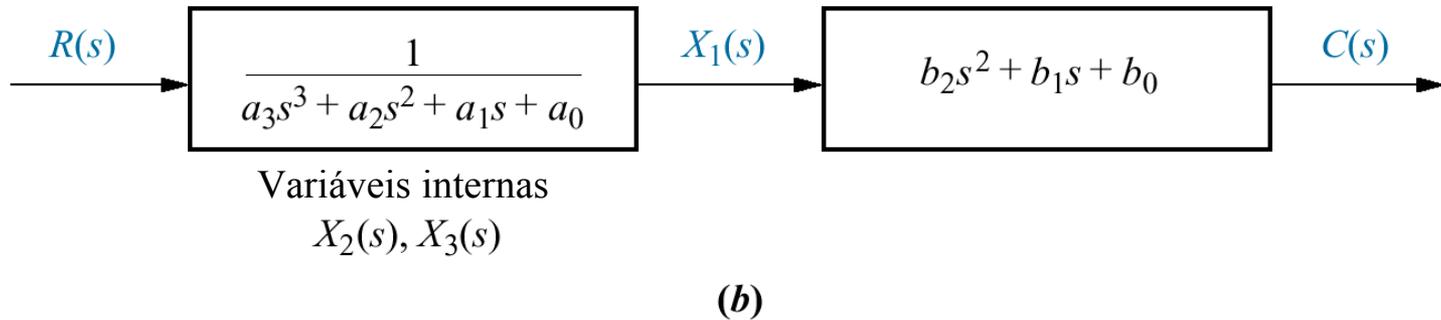
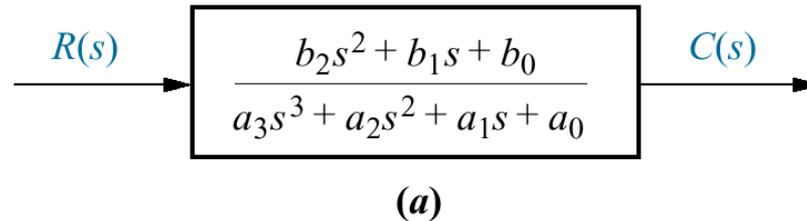


Fig. 3.11

Decompondo uma
função de
transferência



Variáveis internas
 $X_2(s), X_3(s)$

Fig. 3.12

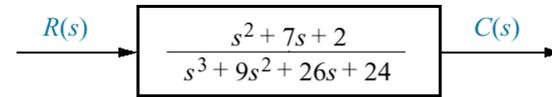
a. Função de transferência;

b. função de transferência decomposta;

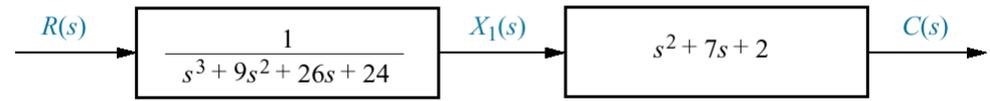
c. diagrama de blocos equivalente.

Nota:

$$y(t) = c(t)$$

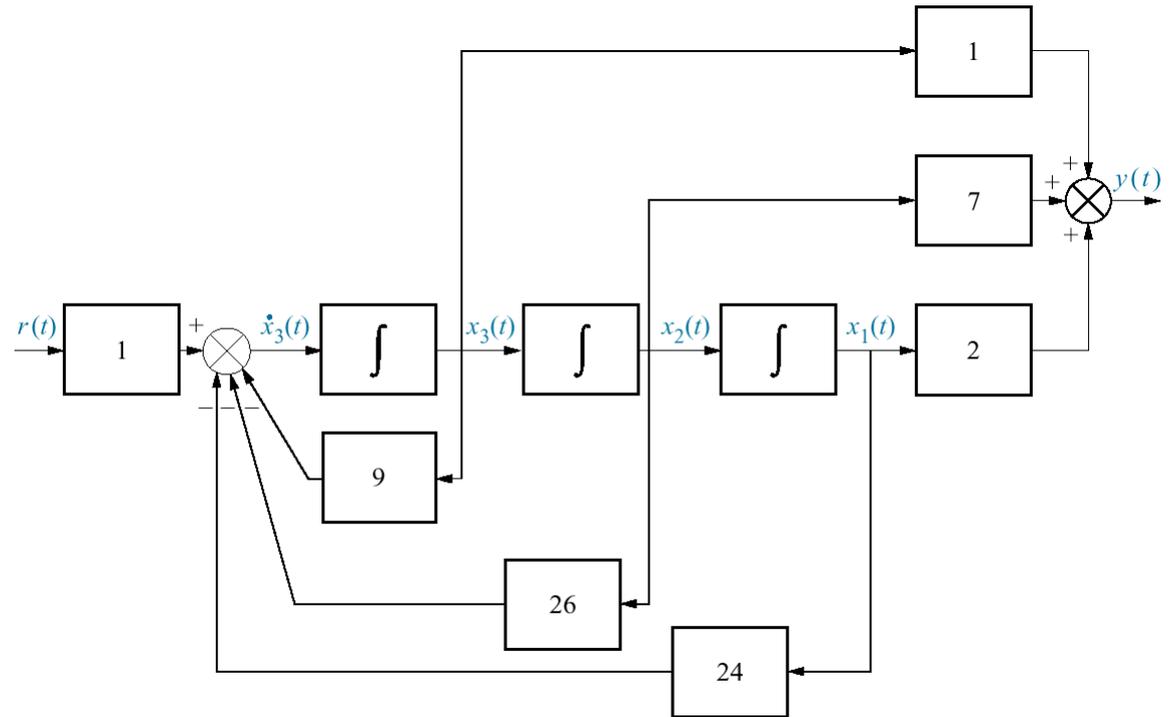


(a)



$X_2(s), X_3(s)$

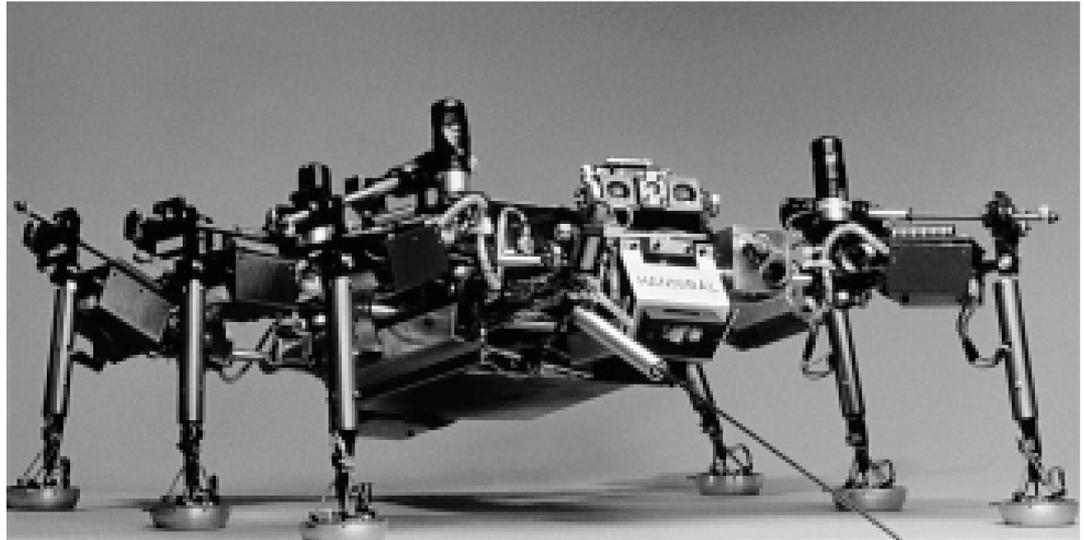
(b)



(c)

Fig. 3.13

Robôs ambulantes, como o Hannibal mostrado aqui, podem ser usados para explorar ambientes hostis e terrenos acidentados como os encontrados em outros planetas ou no interior de vulcões.



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Fig. 3.14

- a. Pêndulo simples;
- b. componentes da força Mg ;
- c. diagrama de corpo livre

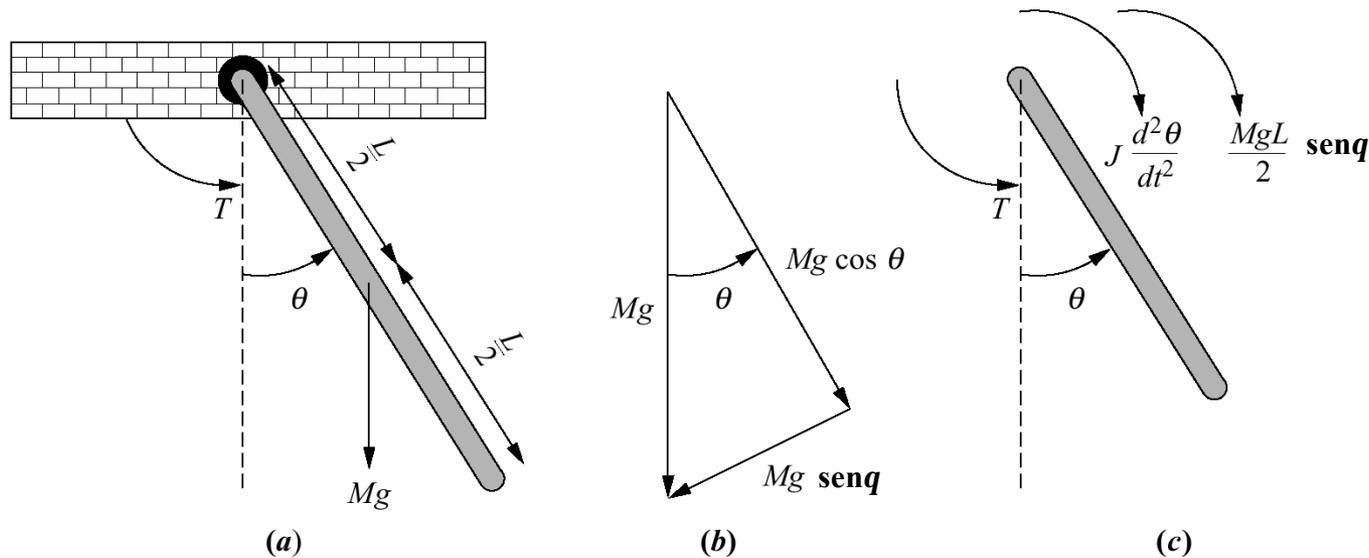


Fig. 3.15

Sistema mecânico não-linear em translação para o Exercício de Avaliação 3.5

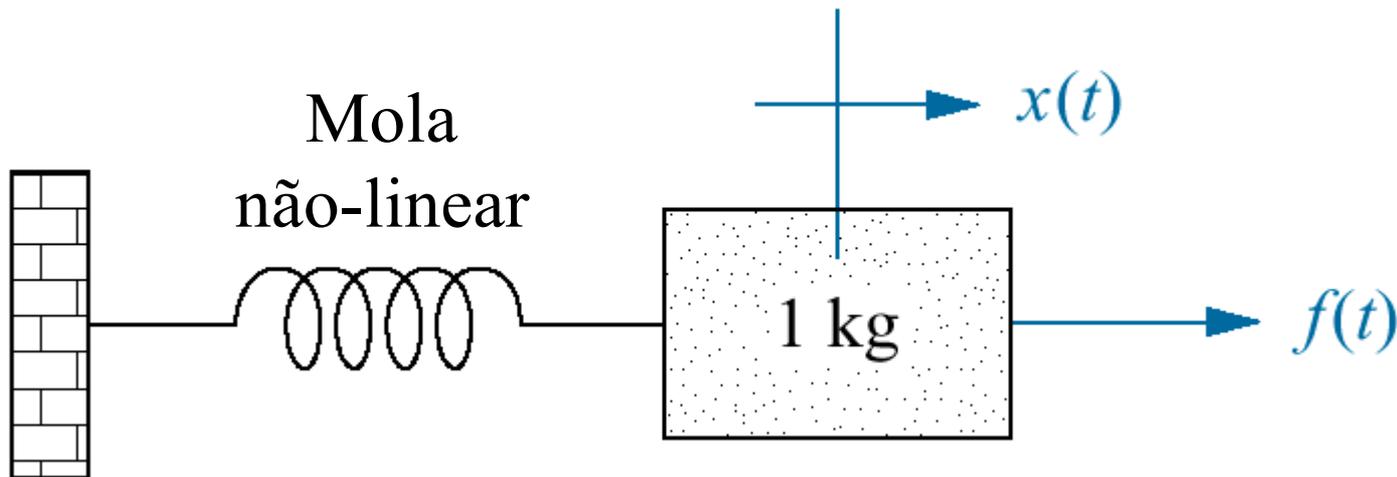


Fig. 3.16

Níveis de concentração de medicamentos em um ser humano

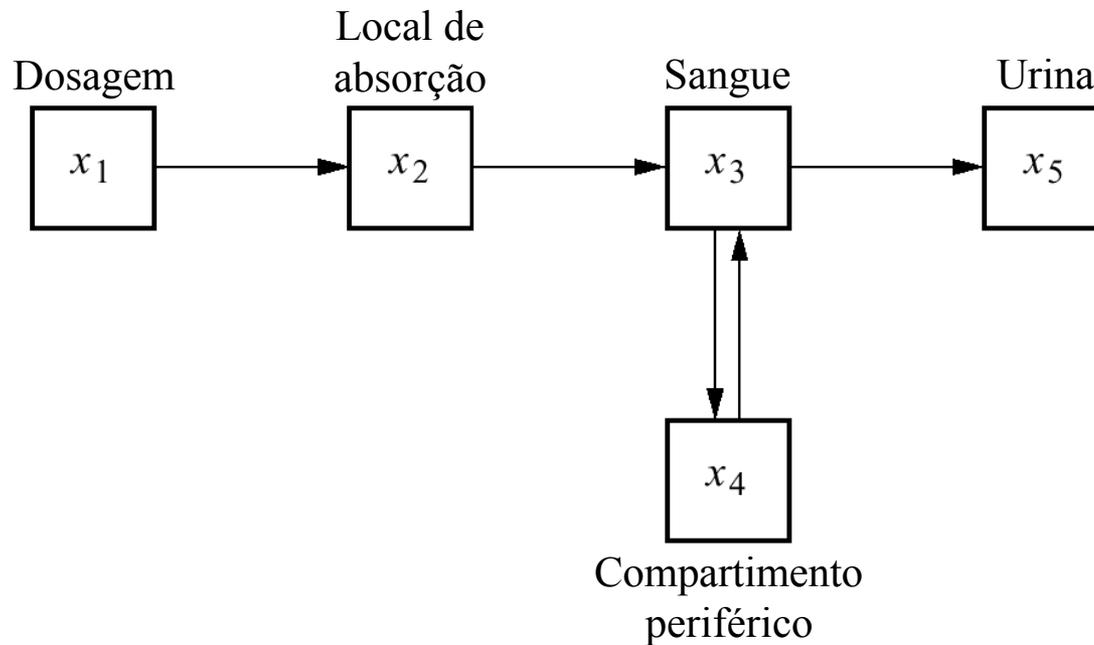


Fig. 3.17
 Modelo de sistema
 aquífero

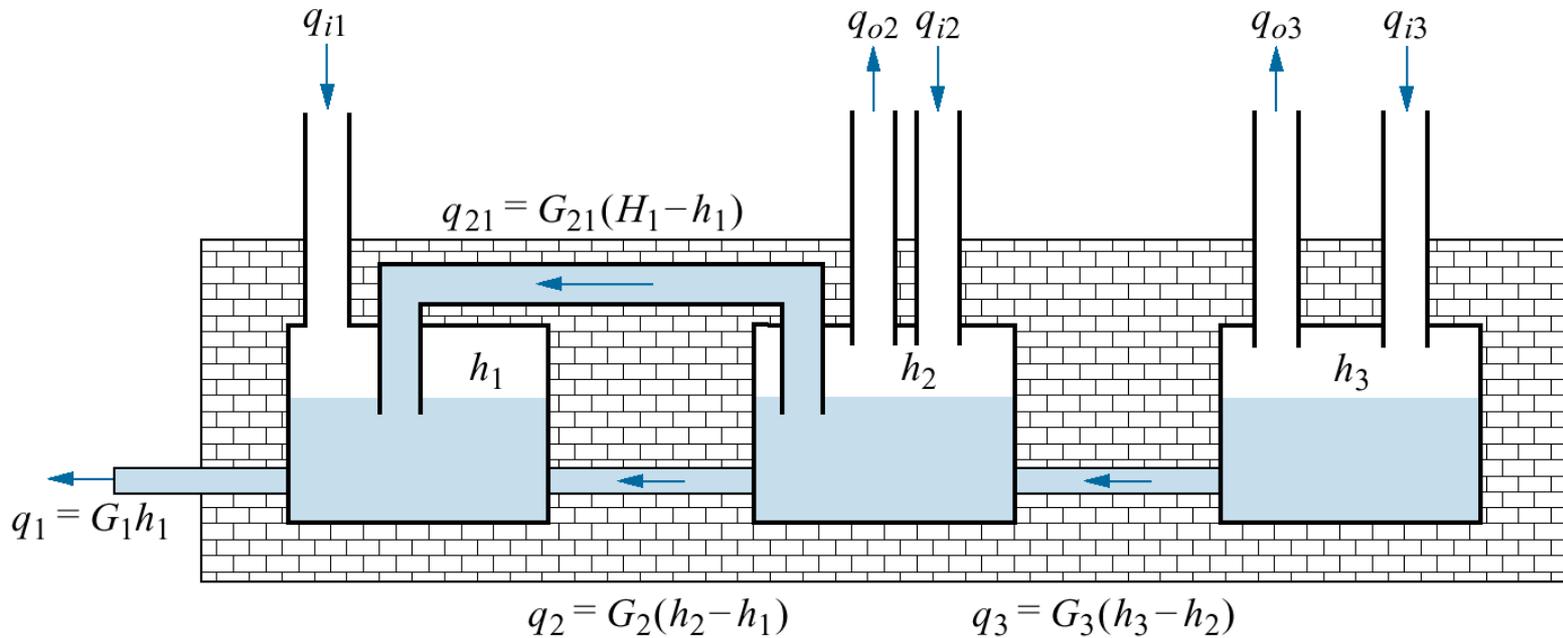


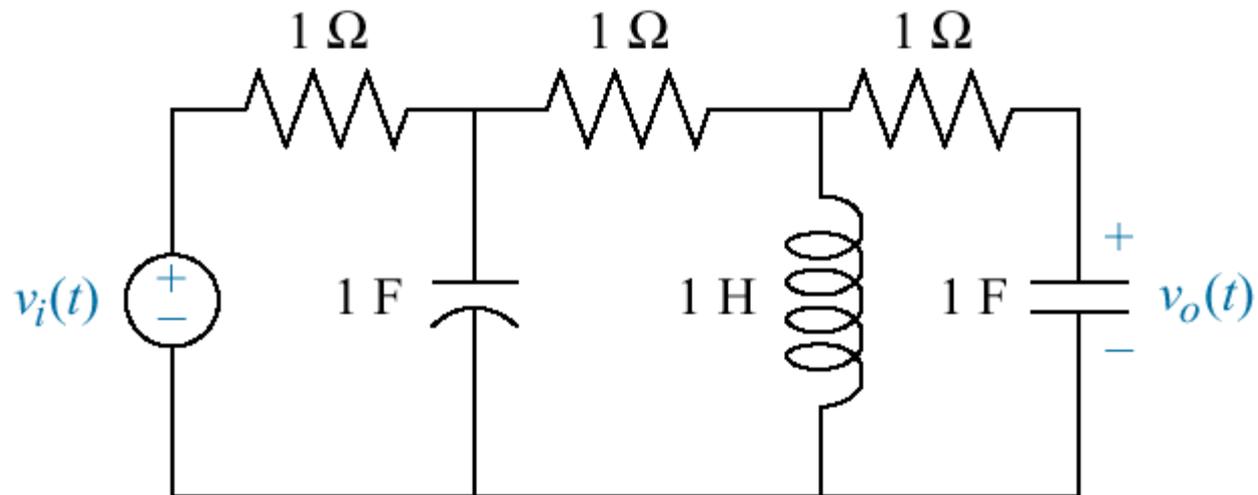
Fig. P3.1

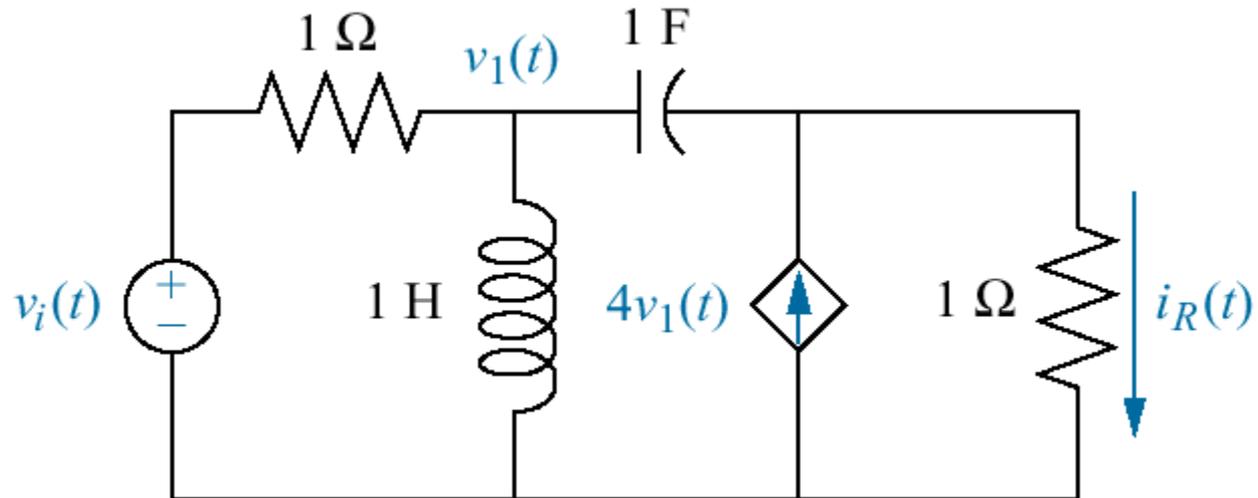
Fig. P3.2

Fig. P3.3

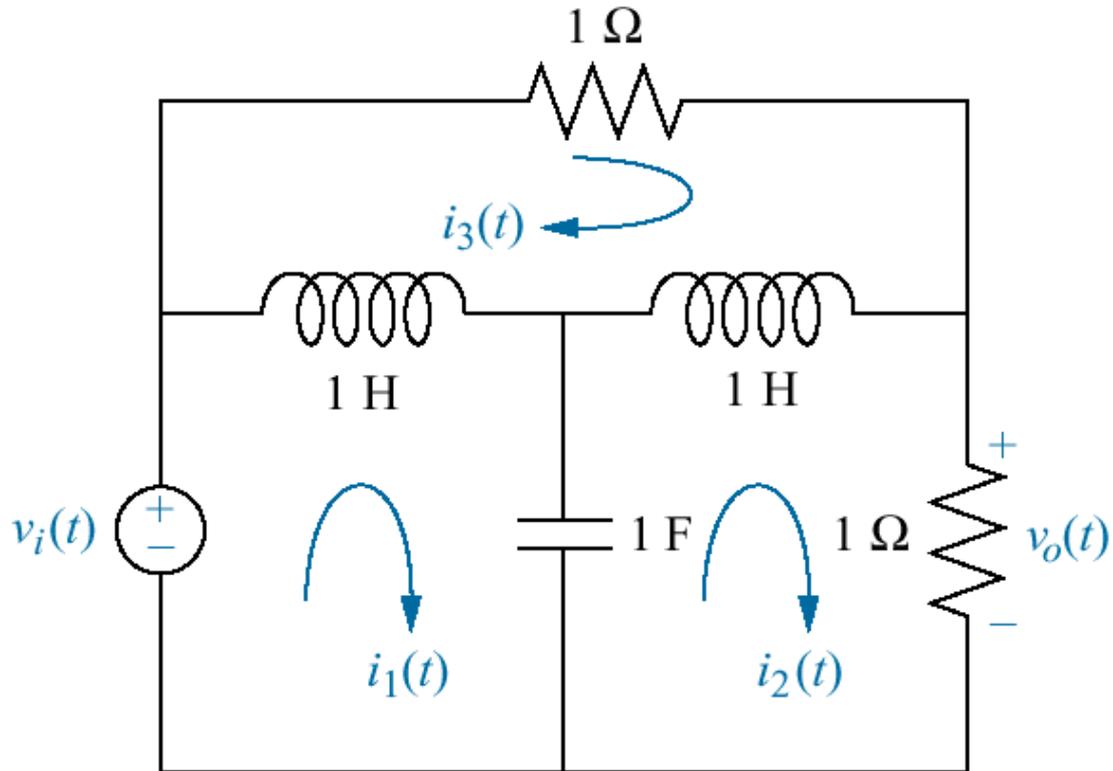


Fig. P3.4

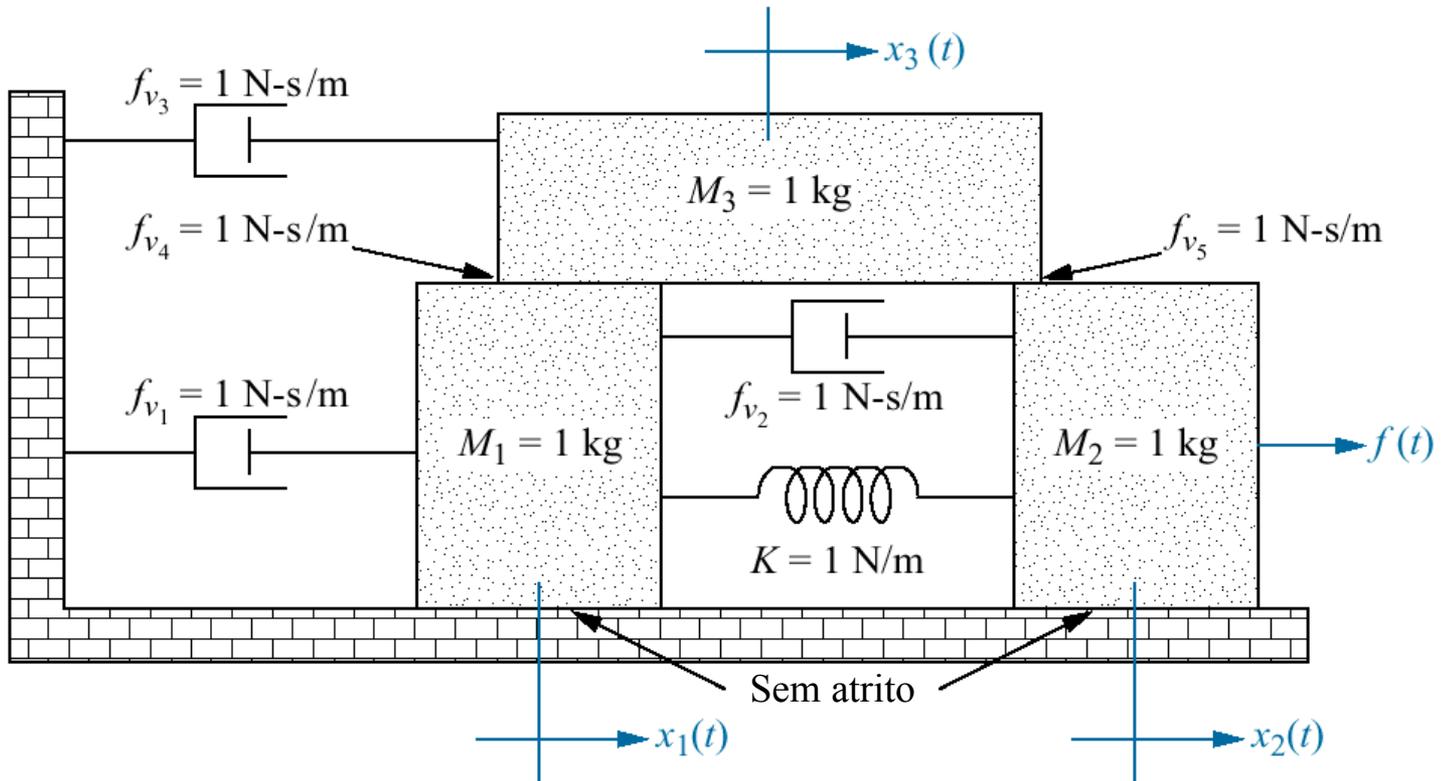


Fig. P3.5

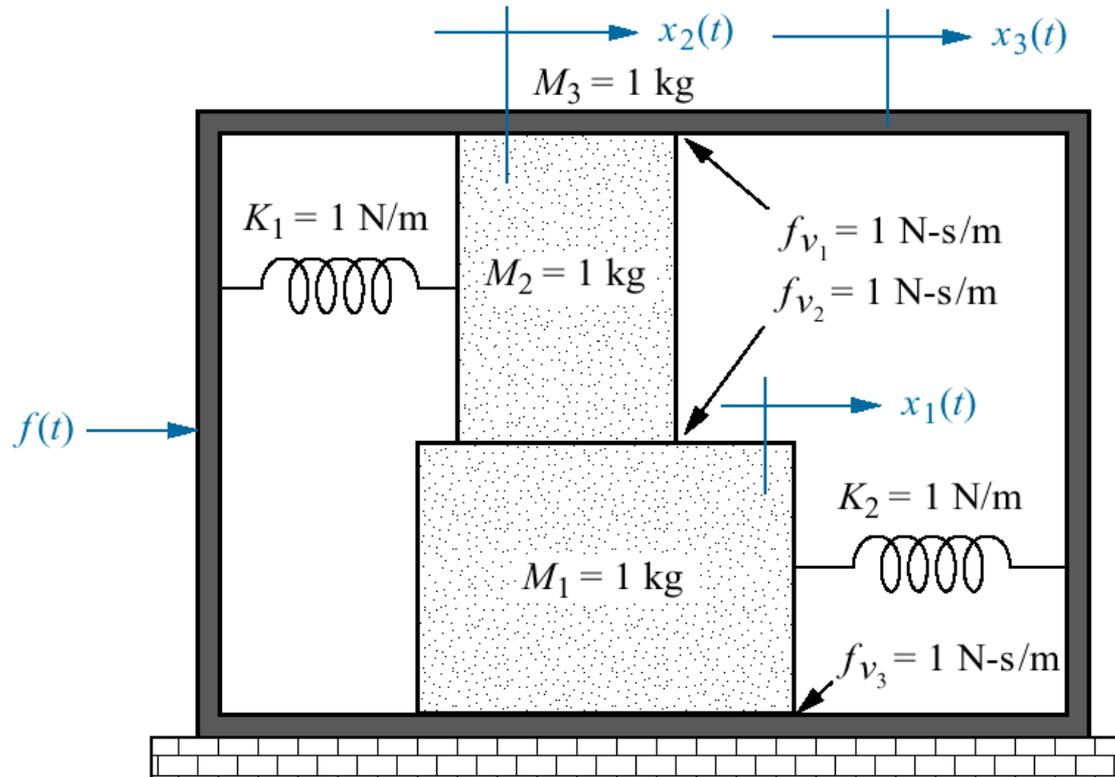


Fig. P3.6

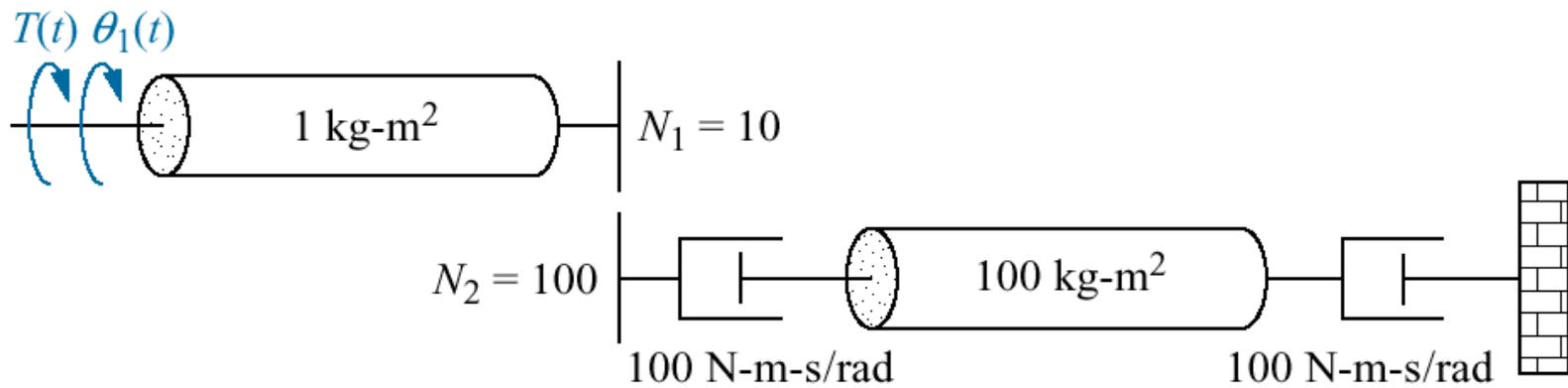


Fig. P3.7

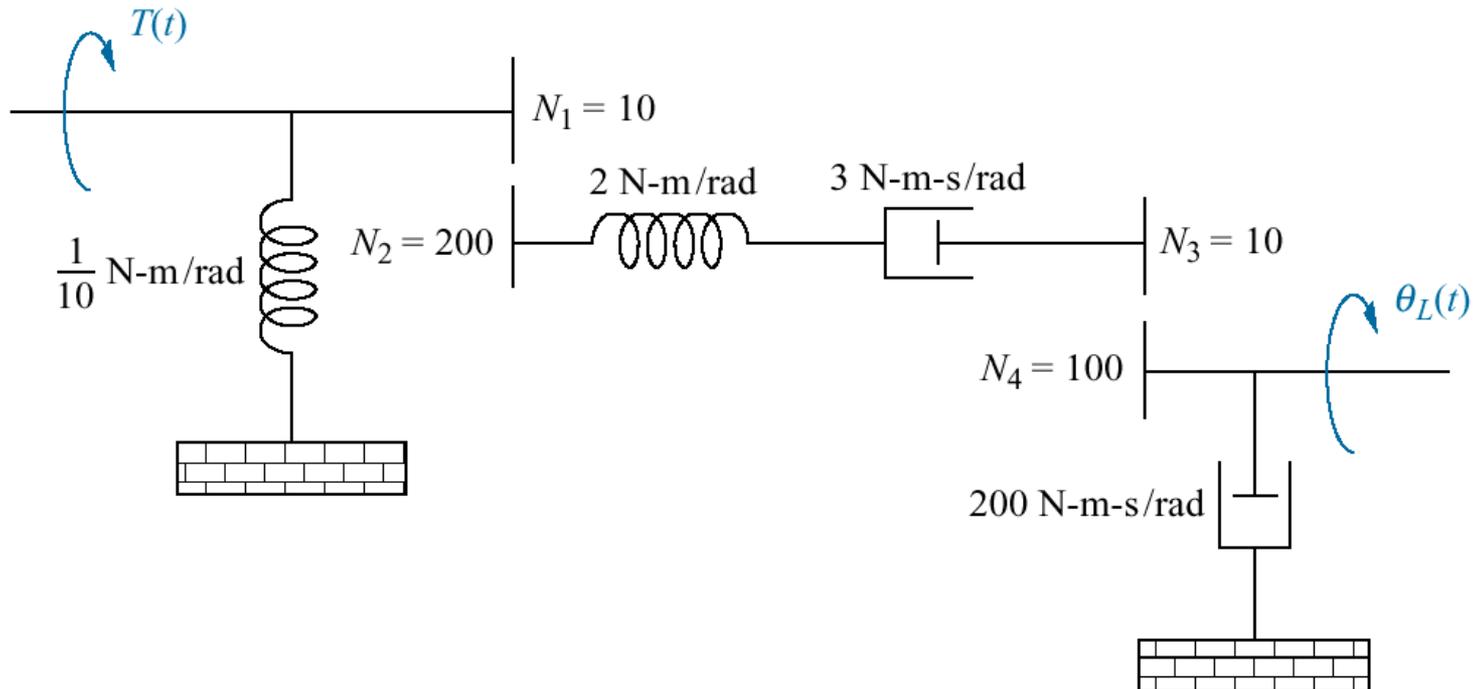


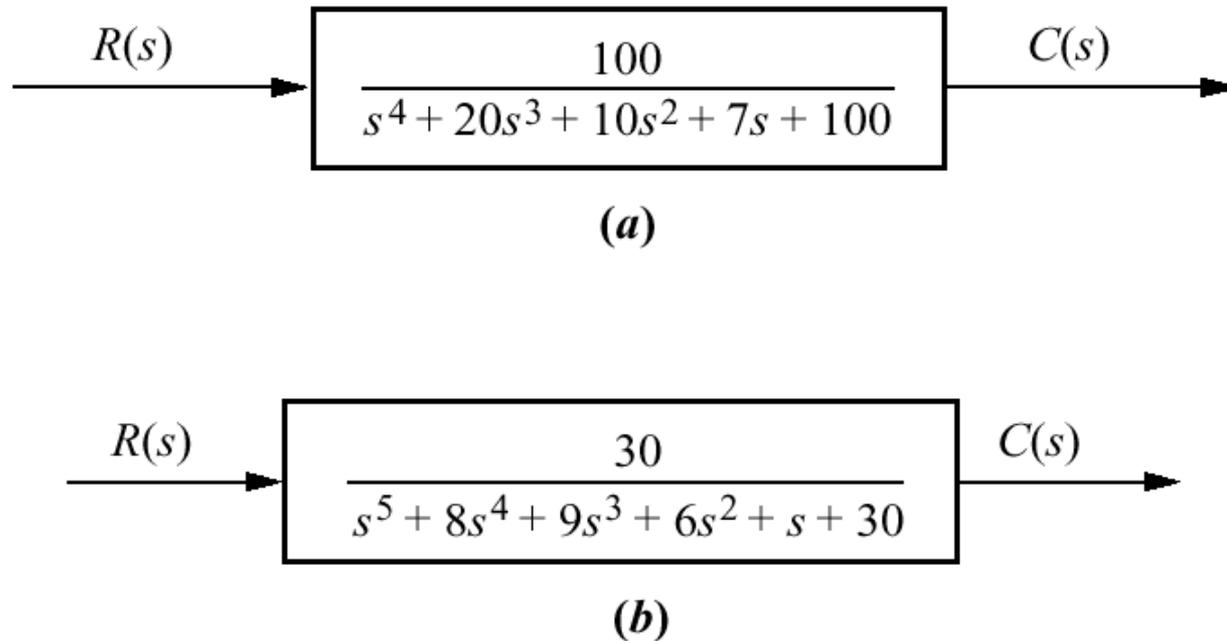
Fig. P3.8

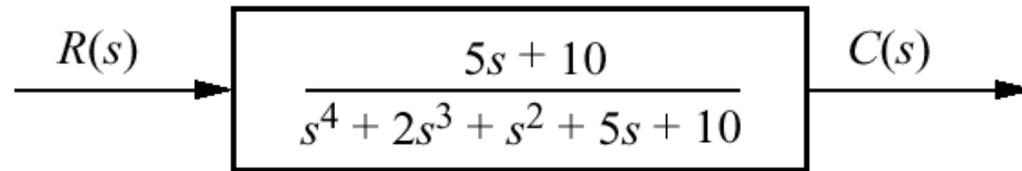
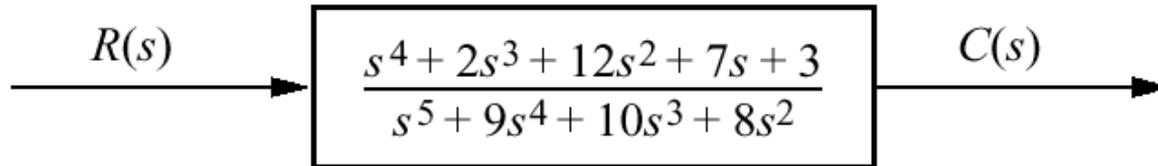
Fig. P3.9**(a)****(b)**

Fig. P3.10

Sistema giroscópico

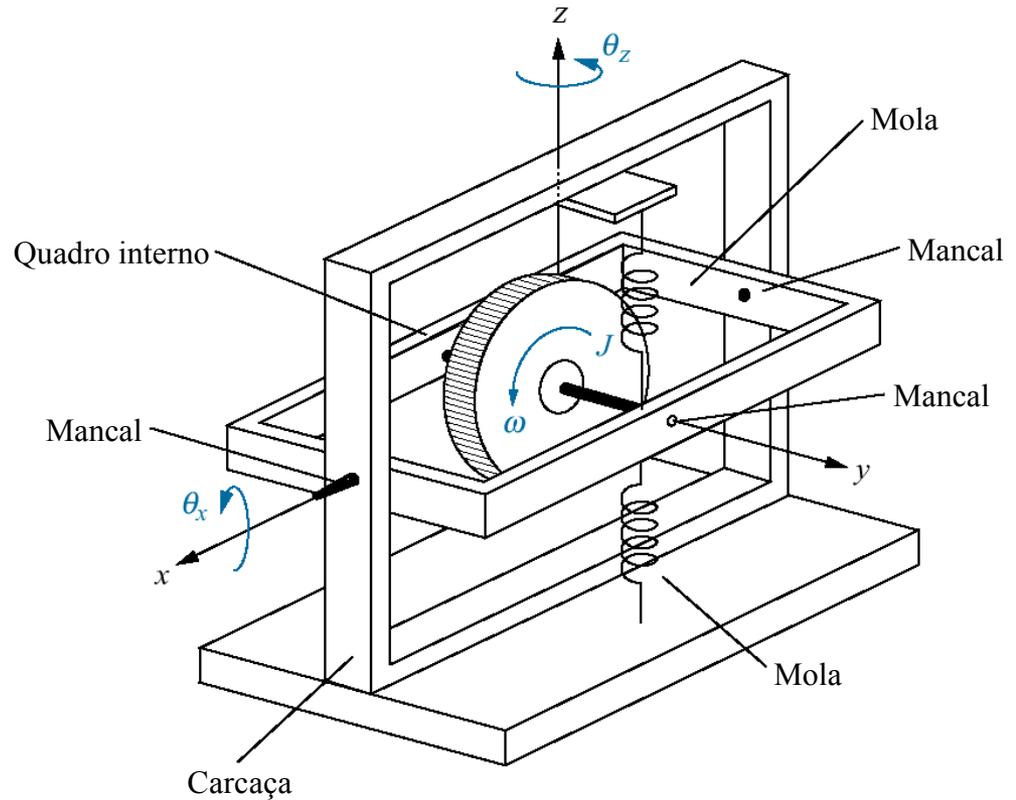


Fig. P3.11
Míssil

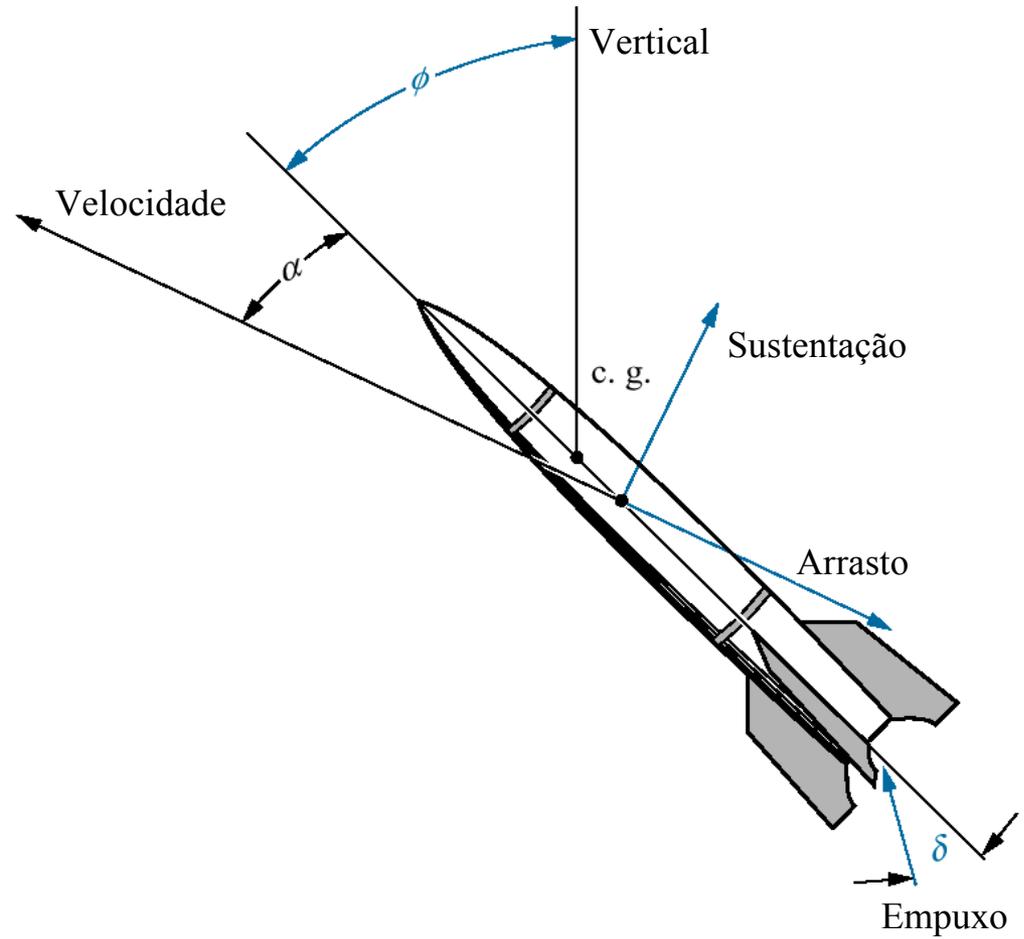


Fig. P3.12
Motor e carga

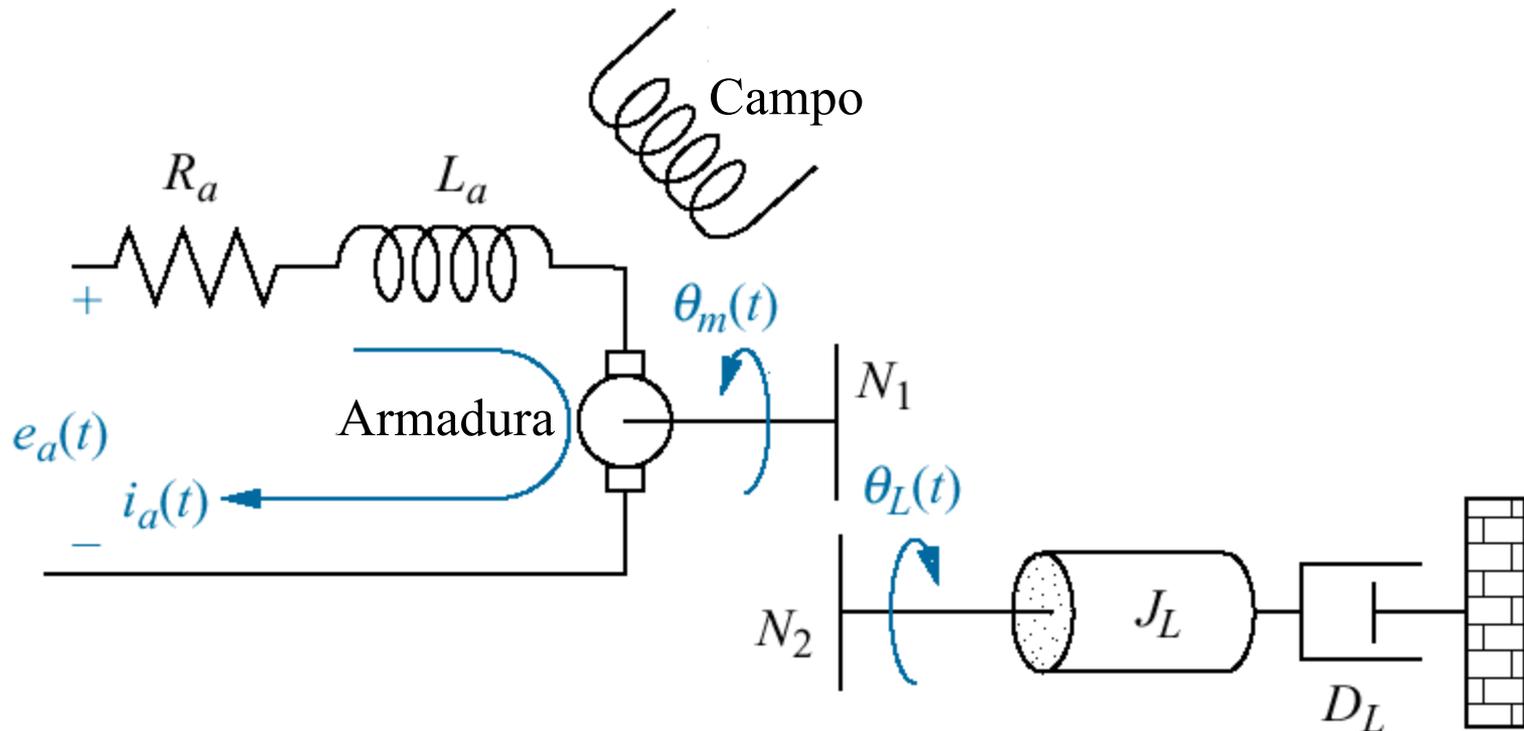


Fig. P3.13

Sistema mecânico não-linear

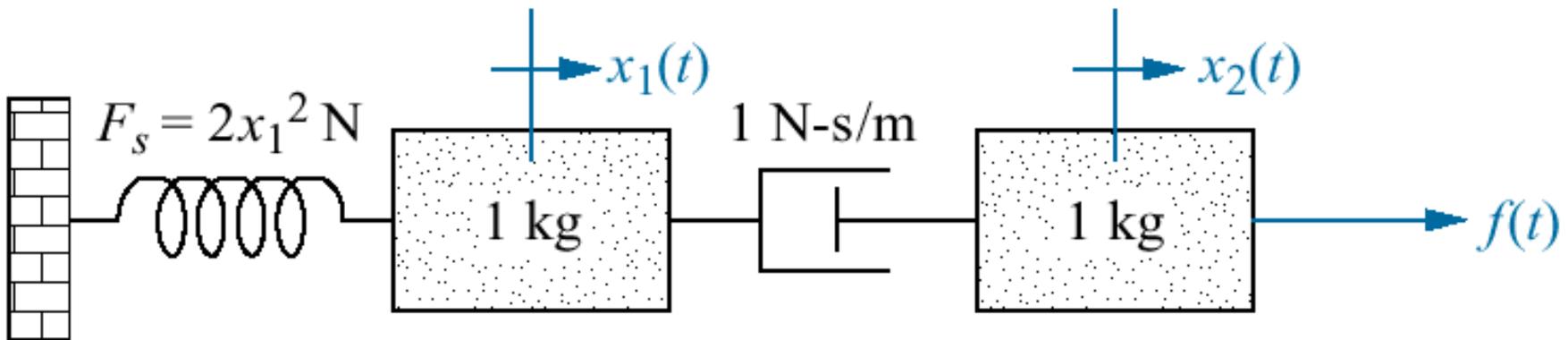


Fig. P3.14

- a. Robô com sistema de imagem por televisão (©1992 IEEE);
- b. diagrama vetorial mostrando o conceito por trás do acompanhamento automático baseado em imagem (©1992 IEEE);
- c. sistema de controle de rumo

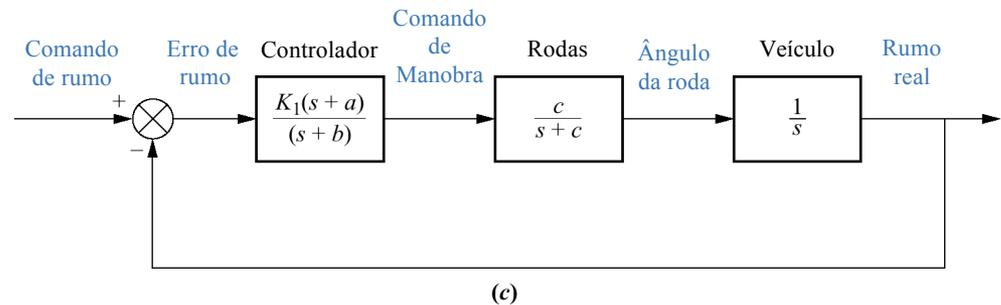
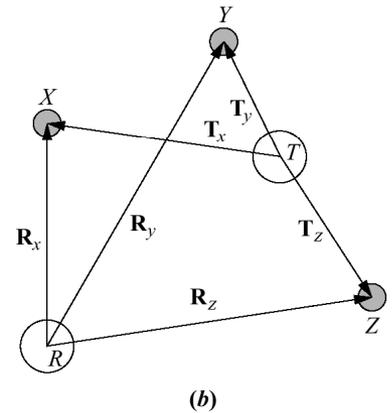
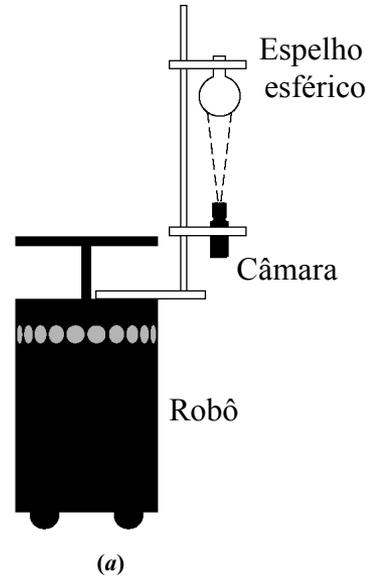
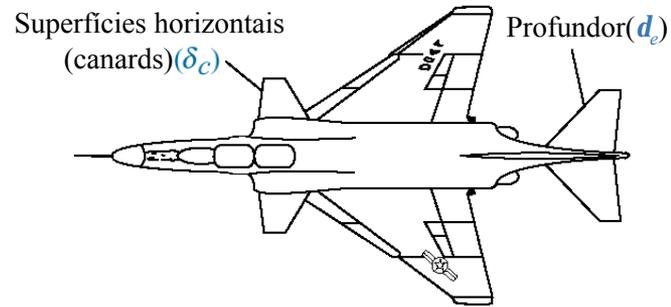


Fig. P3.15

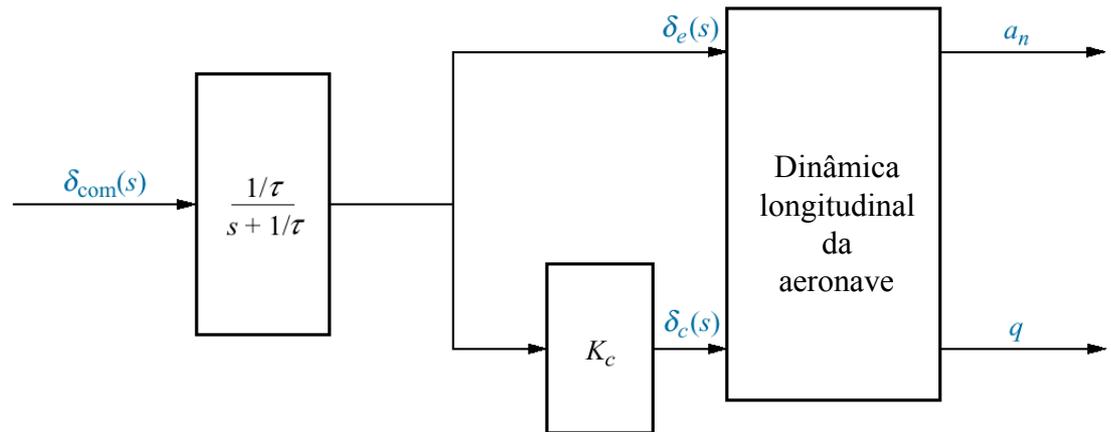
a. F4-E com canards

(© 1992 AIAA);

b. sistema de controle de vôo a malha aberta (© 1992 AIAA)



(a)



(b)

Fig. P3.16
 Manipulador robótico
 e ambiente-alvo
 (©1997 IEEE)

