Follower

Spring

Roller

Cam

ω_2

$x, \dot{x}, \ddot{x}$

$F_c(t)$

k c

m

$x, \dot{x}, \ddot{x}$

$F_c(t)$

F_s F_d

m

$x, \dot{x}, \ddot{x}$

(a) Physical system   *(b)* Lumped model   *(c)* Free-body diagram

FIGURE 15-1

One-*DOF* lumped parameter model of a cam-follower system including damping

*†15-6   A mass-spring damper system as shown in Figure 15-1b (p. 731) has the values shown in Table P15-1. Find the undamped and damped natural frequencies and the value of critical damping for the system(s) assigned.

**TABLE P15-1
Problem 15-6**

	m	k	c
a.	1.2	14	1.1
b.	2.1	46	2.4
c.	30.0	2	0.9
d.	4.5	25	3.0
e.	2.8	75	7.0
f.	12.0	50	14.0

* Answers in Appendix F.

† These problems are suited to solution using *Mathcad, Matlab,* or *TKSolver* equation solver programs. In most cases, your solution can be checked with program DYNACAM.