

Figure 2.1 Mass-spring system.

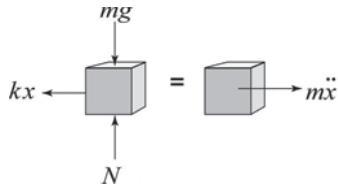


Figure 2.2 Kinetic diagram.

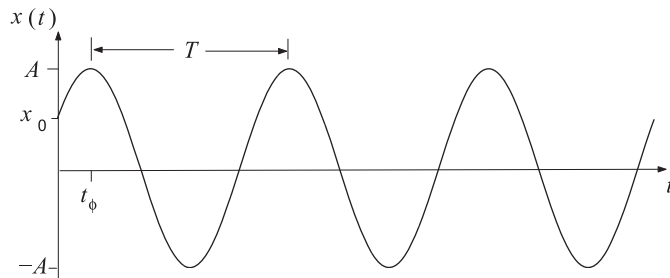


Figure 2.3 Time history of a harmonic oscillator in free vibration.

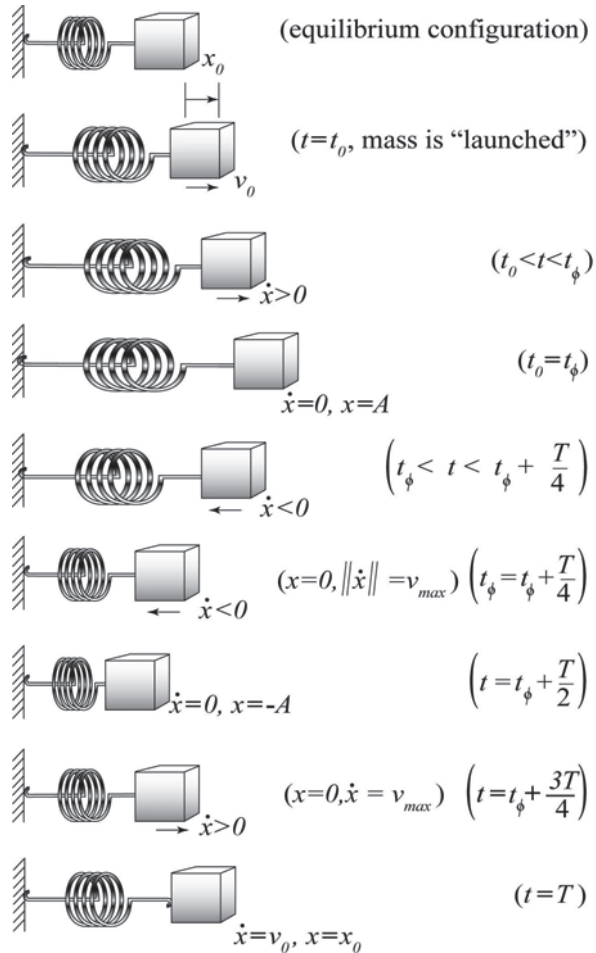


Figure 2.4 Freeze-frame depiction of motion of mass-spring system.

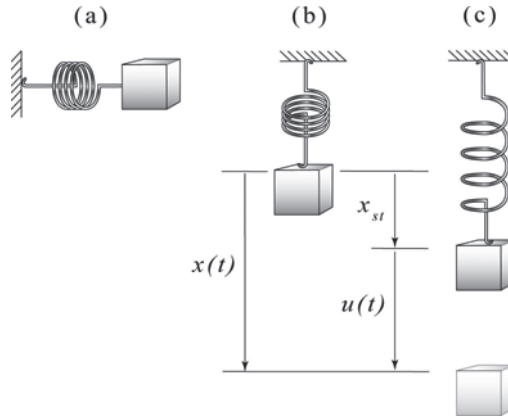


Figure 2.5 Mass-spring system: (a) in horizontal equilibrium, (b) vertical configuration with spring unstretched, (c) vertical equilibrium configuration and generic position of mass in motion.

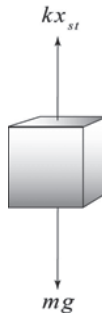


Figure 2.6 Free-body diagram for mass in equilibrium.

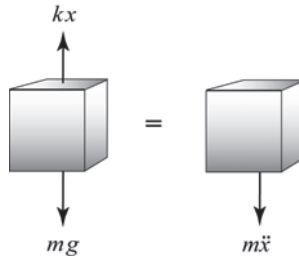


Figure 2.7 Kinetic diagram for vertical motion.

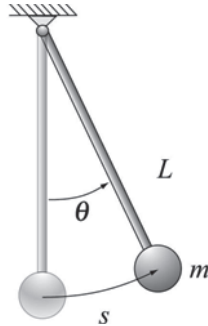


Figure 2.8 The simple pendulum.



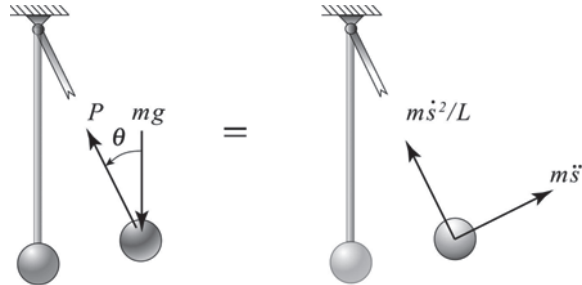


Figure 2.9 Kinetic diagram for bob of simple pendulum.

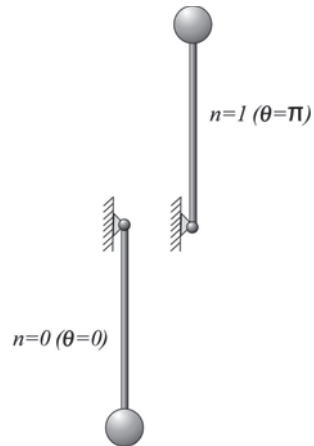


Figure 2.10 Equilibrium configurations of the simple pendulum.

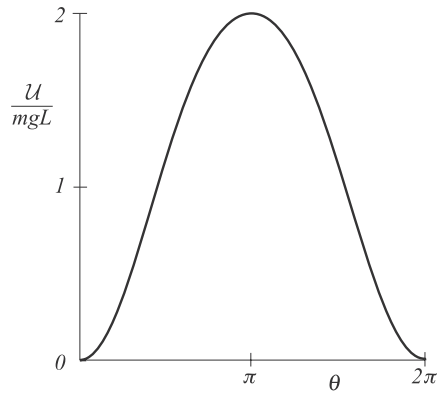


Figure 2.11 Potential energy of the simple pendulum as a function of angular displacement.

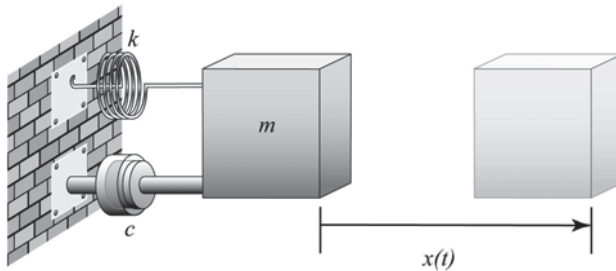


Figure 2.12 Mass-spring-damper system.

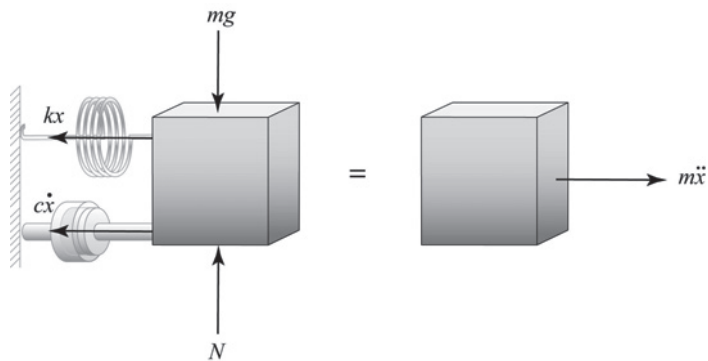


Figure 2.13 Kinetic diagram for mass-spring-damper system.

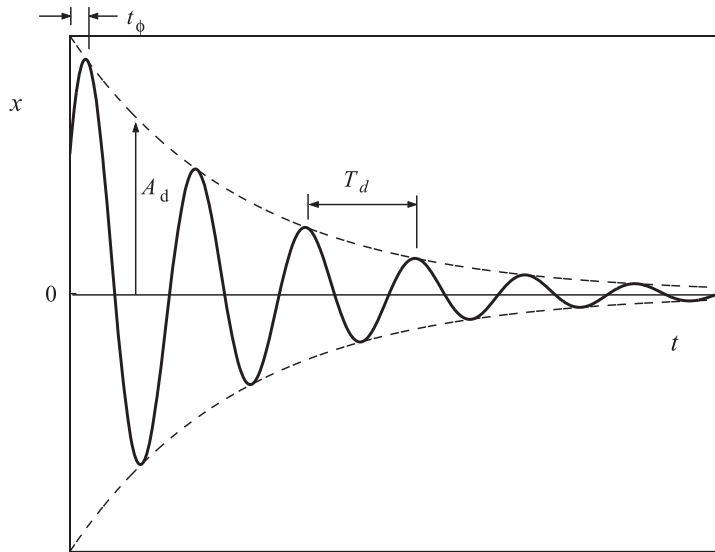


Figure 2.14 Characteristic response history of an underdamped system.

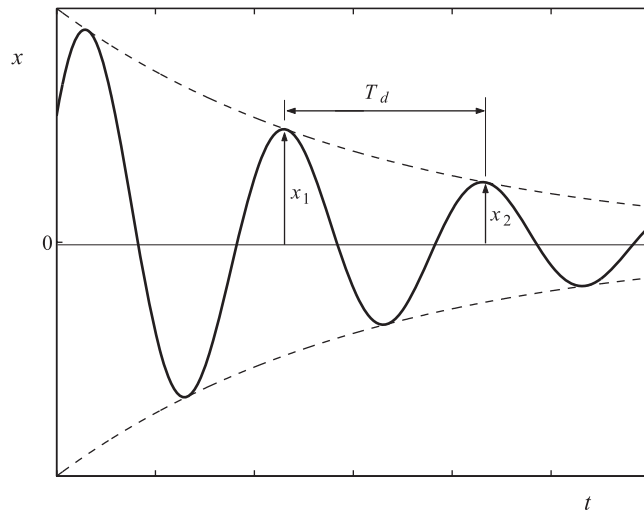


Figure 2.15 Two measurements taken one period apart.

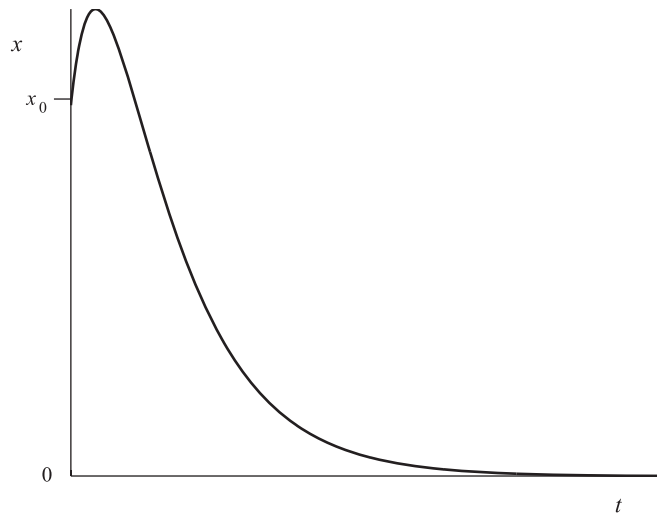


Figure 2.16 Typical response history of an overdamped system.



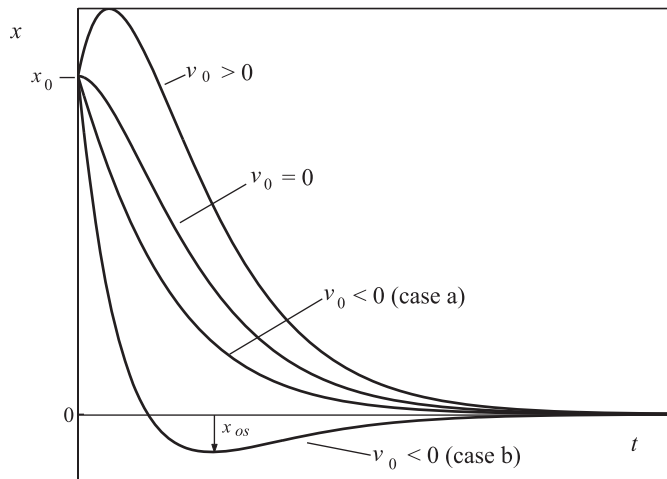


Figure 2.17 Characteristic response histories of critically damped systems.

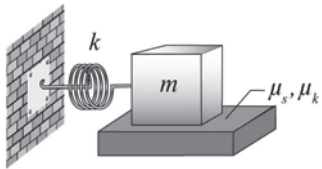


Figure 2.18 Mass-spring system on rough surface.

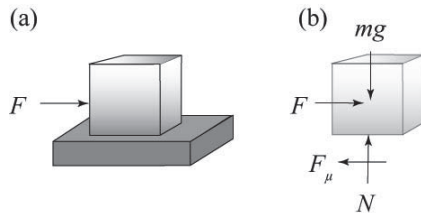


Figure 2.19 Equilibrium of block on rough surface: (a) block under applied load, (b) free-body diagram.

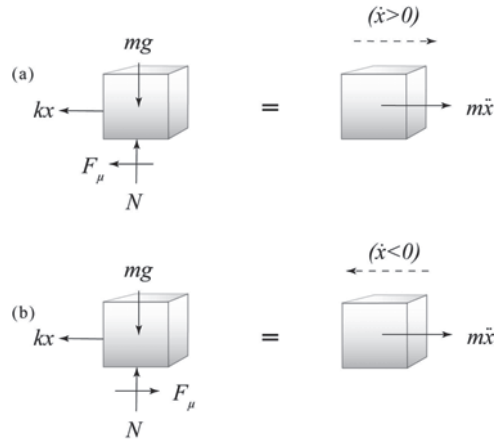


Figure 2.20 Kinetic diagram.

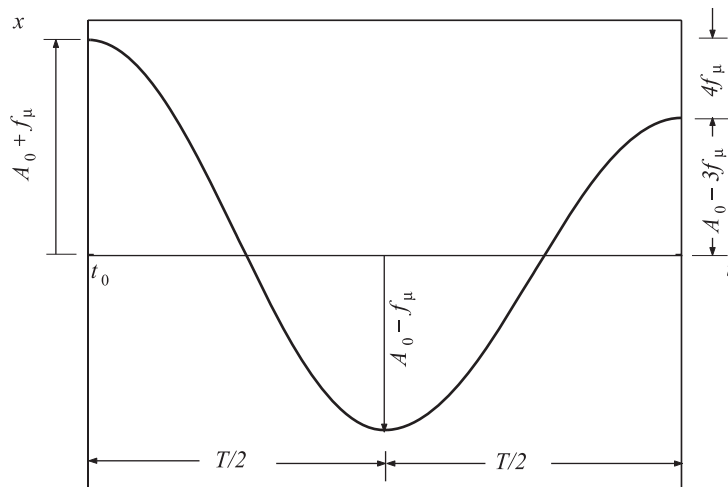


Figure 2.21 Typical response history over one cycle.

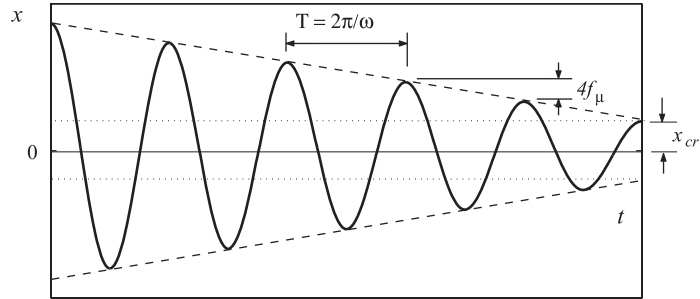


Figure 2.22 Response history of system with Coulomb damping from onset to cessation of motion.

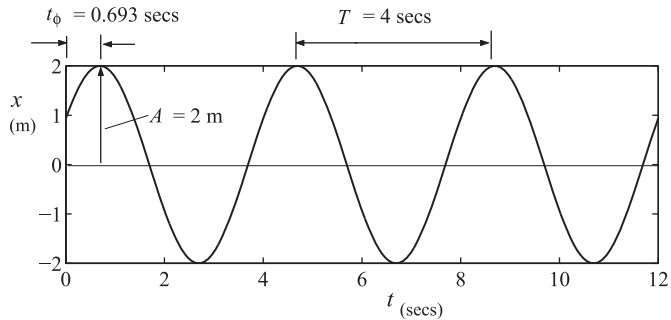


Figure E2.1 Time history of response.

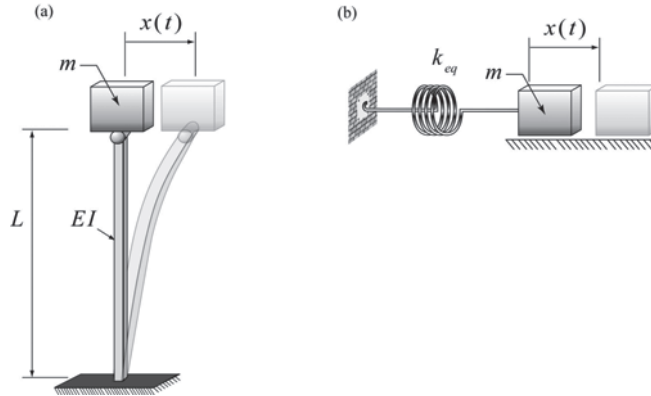


Figure E2.2 (a) Column-mass structure, (b) equivalent system.



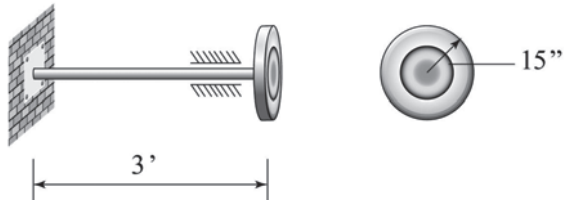


Figure E2.3-1 Wheel and axle.

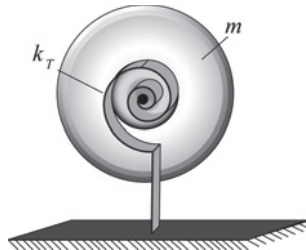


Figure E2.3-2 Equivalent system.

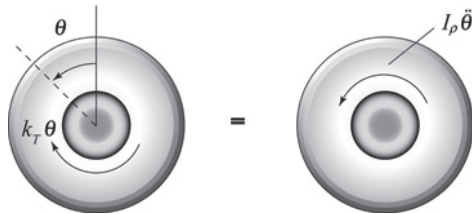


Figure E2.3-3 Kinetic diagram.

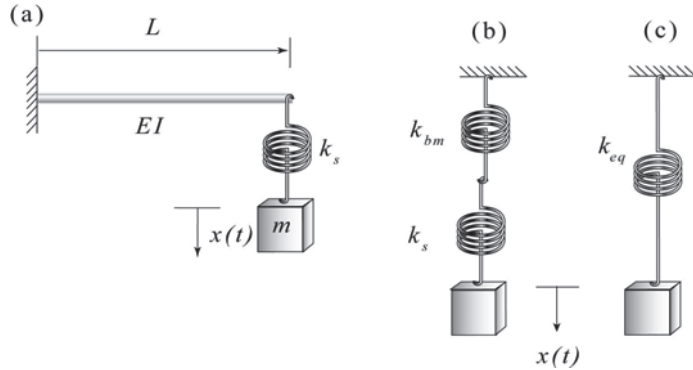


Figure E2.5 Elastic beam with suspended mass: (a) physical system, (b) representation of compound system with beam as equivalent 1 d.o.f. system, (c) equivalent system for beam and spring combination.

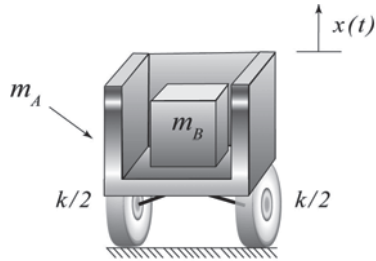


Figure E2.6-1 Two wheel trailer carrying package.

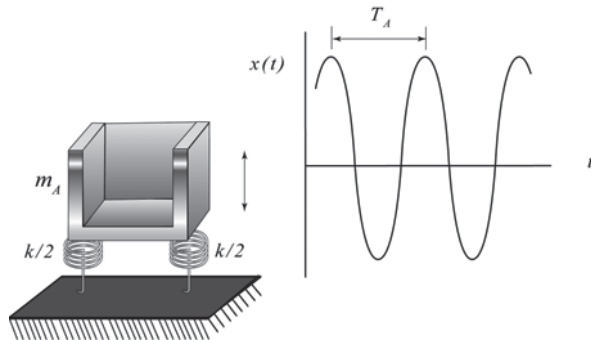


Figure E2.6-2 Free vibration of trailer alone.

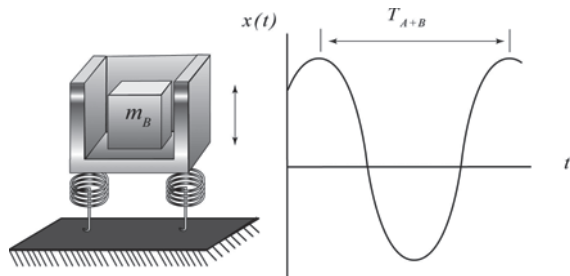


Figure E2.6-3 Free vibration of trailer with package.

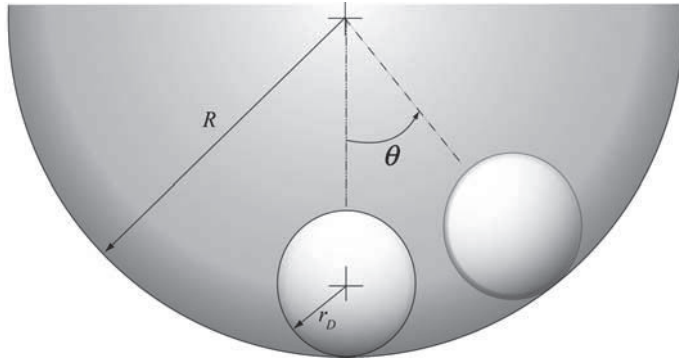


Figure E2.8-1 Disk rolling on circular track.



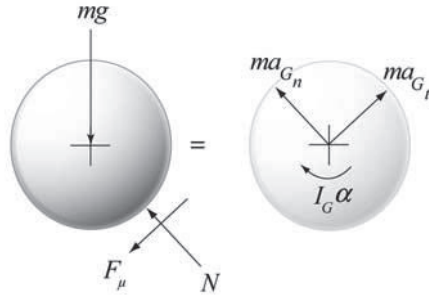


Figure E2.8-2 Kinetic diagram for rolling disk.

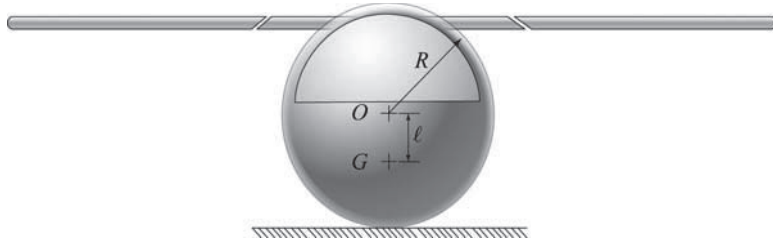


Figure E2.9-1 Teetering glider.

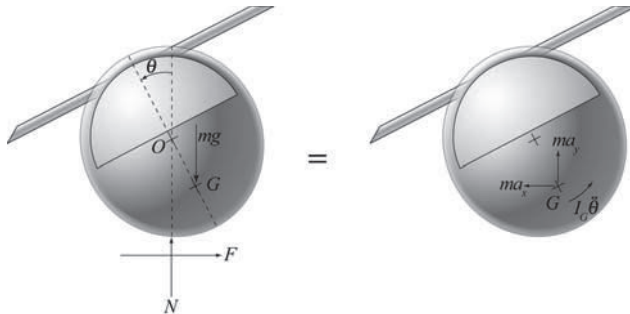


Figure E2.9-2 Kinetic diagram for glider.

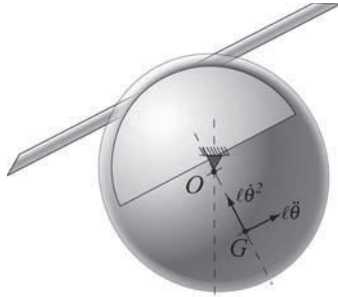


Figure E2.9-3 Relative motion of glider.

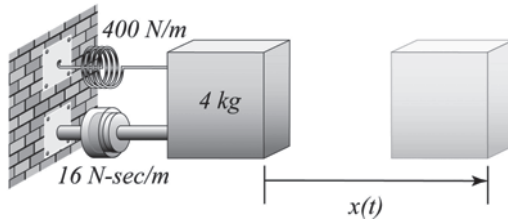


Figure E2.11

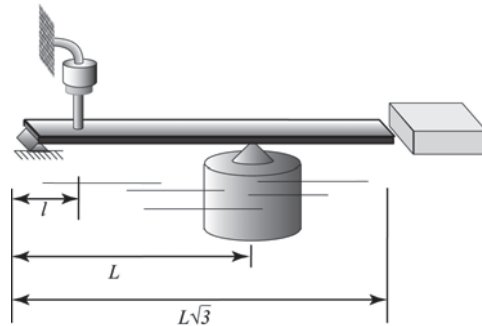


Figure E2.15-1 Plank and float system.

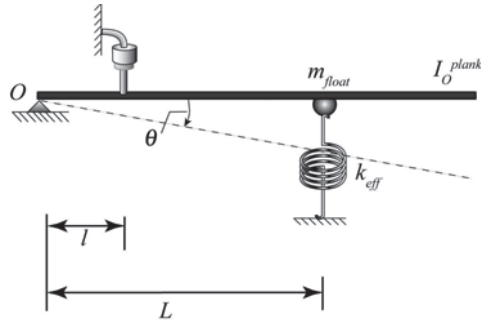


Figure E2.15-2 Equivalent system.

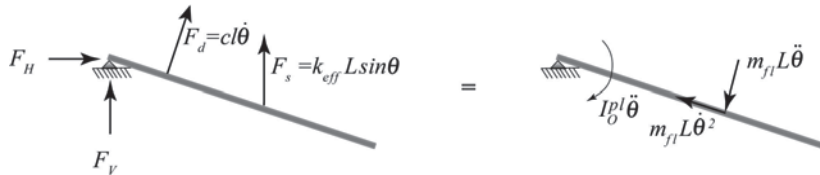


Figure E2.15-3 Kinetic diagram.



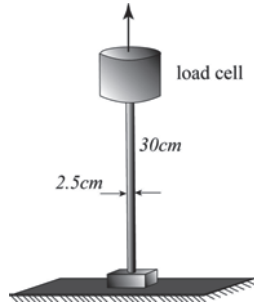


Figure P2.6

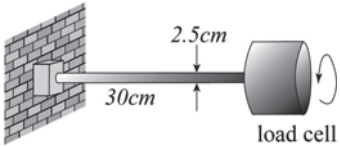


Figure P2.7



Figure P2.8

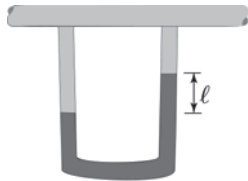


Figure P2.9

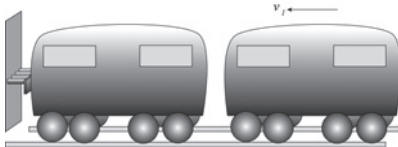


Figure P2.13

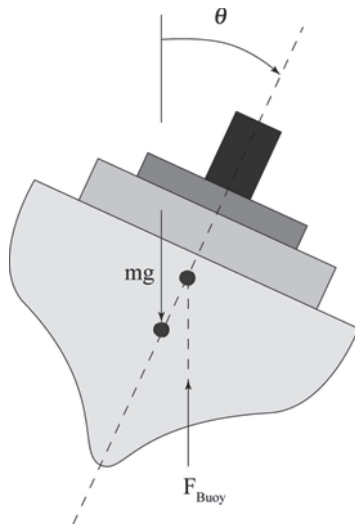


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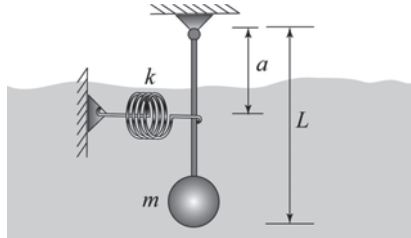


Figure P2.18

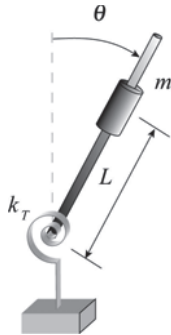


Figure P2.19



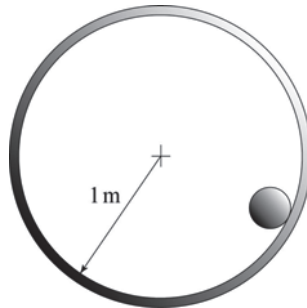


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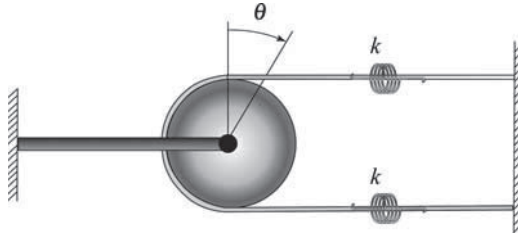


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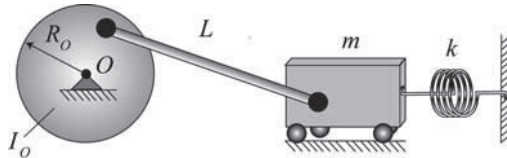


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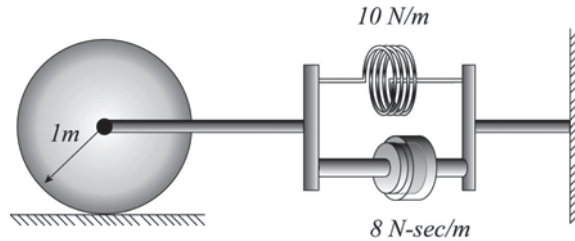


Figure P2.27

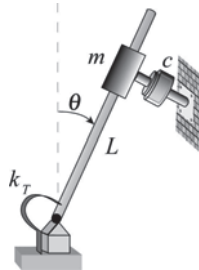


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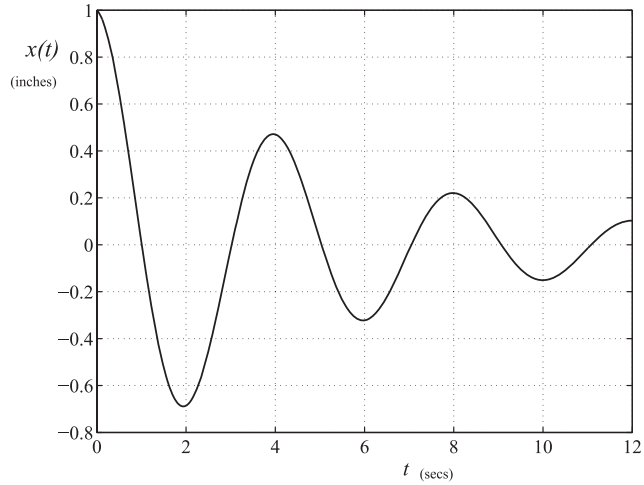


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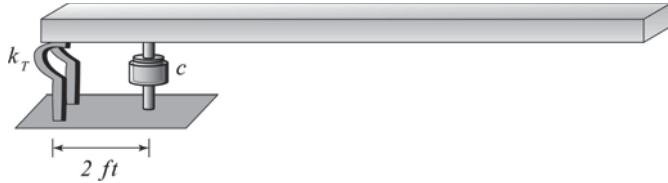


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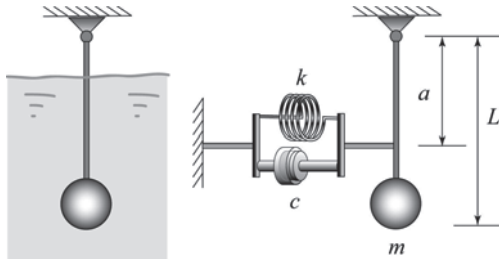


Figure P2.31



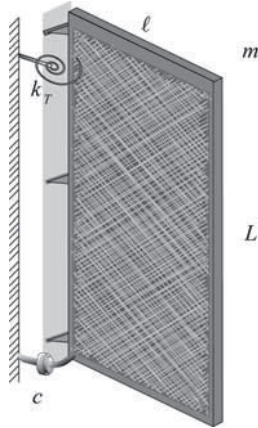


Figure P2.33