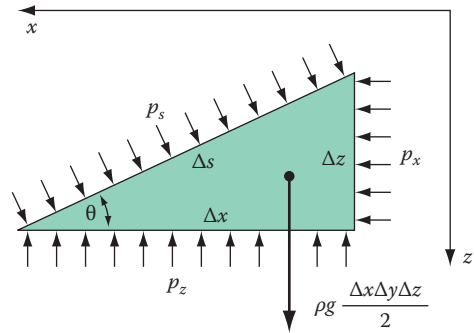
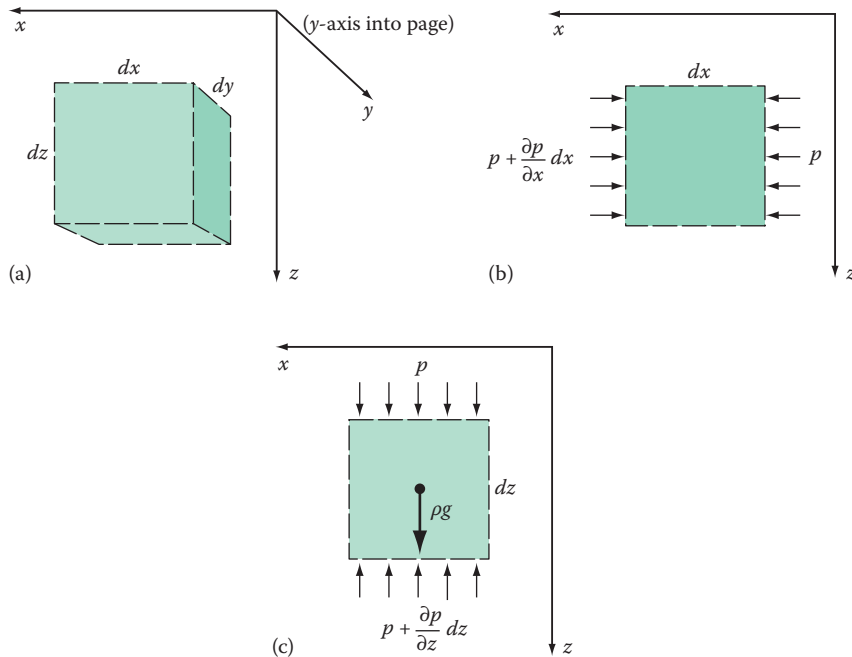


(a)

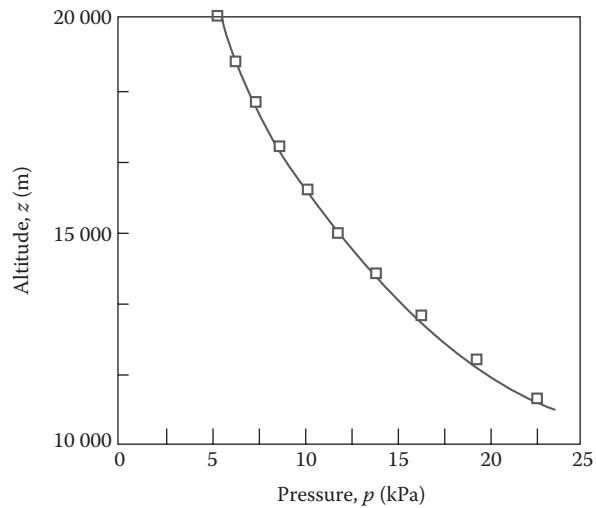


(b)

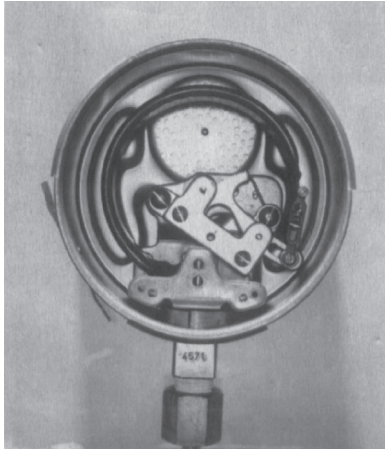
**Figure 2.1** A wedge-shaped particle.



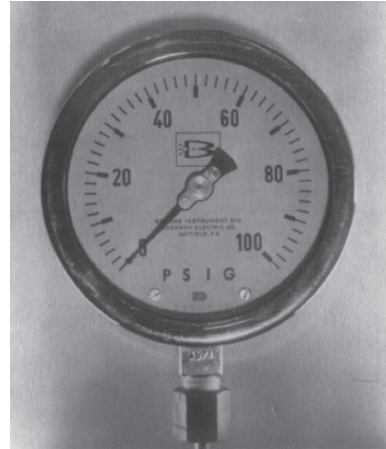
**Figure 2.2** An element of fluid at rest.



**Figure 2.3** Pressure variation with elevation in the stratosphere.



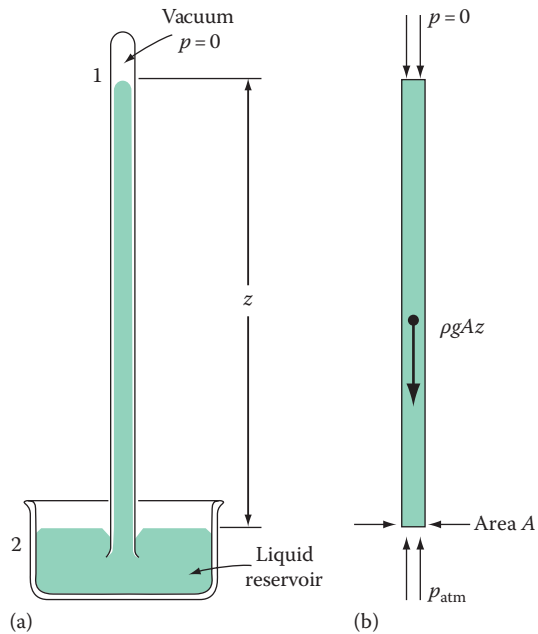
(a)



(b)

**Figure 2.4** A bourdon-tube pressure gauge. (a) Inside view and (b) outside view.





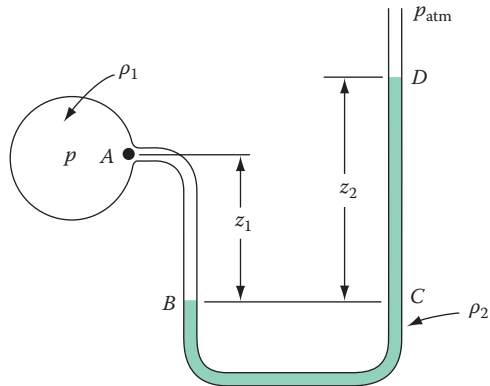
**Figure 2.5** Schematic of a barometer.

Pressure greater than atmospheric pressure			Positive gauge pressure
14.7 psia	Atmospheric pressure		0 psig
101 325 N/m <sup>2</sup>			0 N/m <sup>2</sup>
Partial vacuum			Negative gauge pressure
0 psia	Perfect vacuum		-14.7 psig
0 N/m <sup>2</sup>			-101 325 N/m <sup>2</sup>
Absolute pressure			Gauge pressure

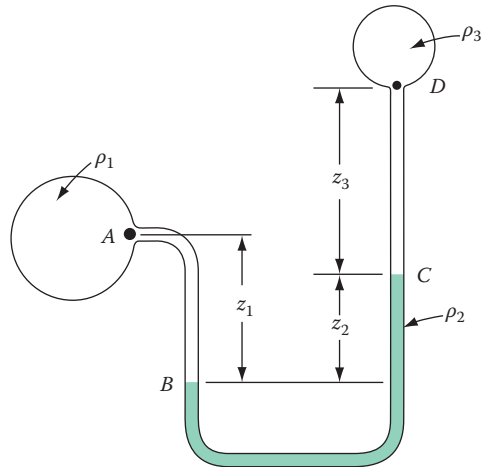
$$1 \text{ atm} = 14.7 \text{ psia} = 10.34 \text{ m water} = 33.91 \text{ ft water}$$

$$1 \text{ atm} = 101\,325 \text{ Pa} = 0.760 \text{ m mercury} = 29.29 \text{ in. mercury}$$

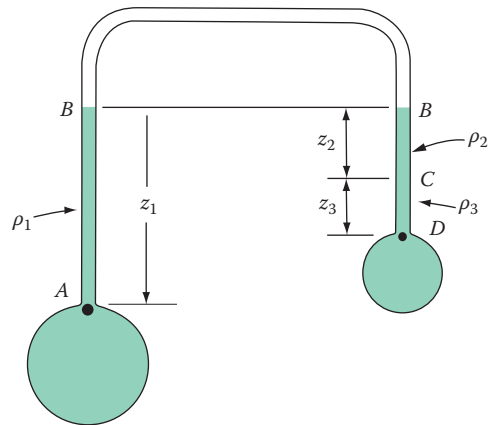
**Figure 2.6** Pressure diagrams comparing absolute and gauge pressures.



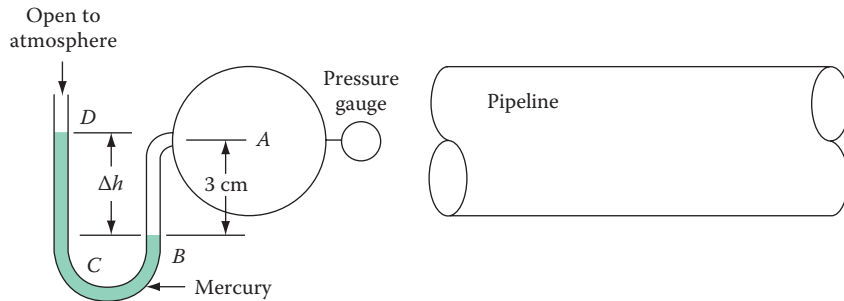
**Figure 2.7** A simple U-tube manometer.



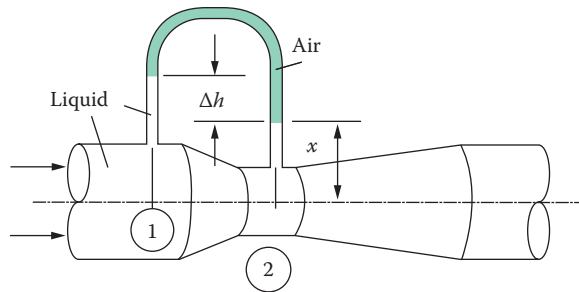
**Figure 2.8** Use of a manometer to measure differential pressure.



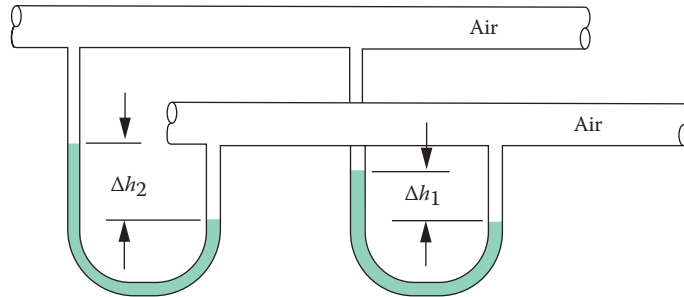
**Figure 2.9** An inverted U-tube differential manometer.



**Figure 2.10** Sketch for Example 2.5.

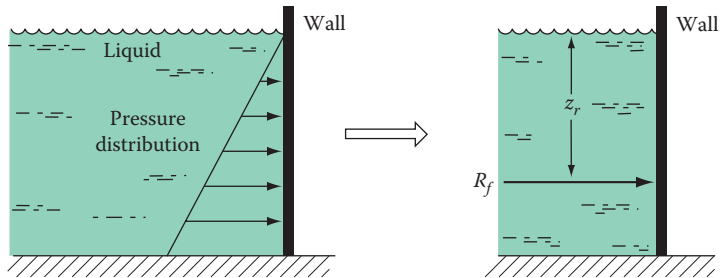


**Figure 2.11** Inverted U-tube manometer attached to a venturi meter.

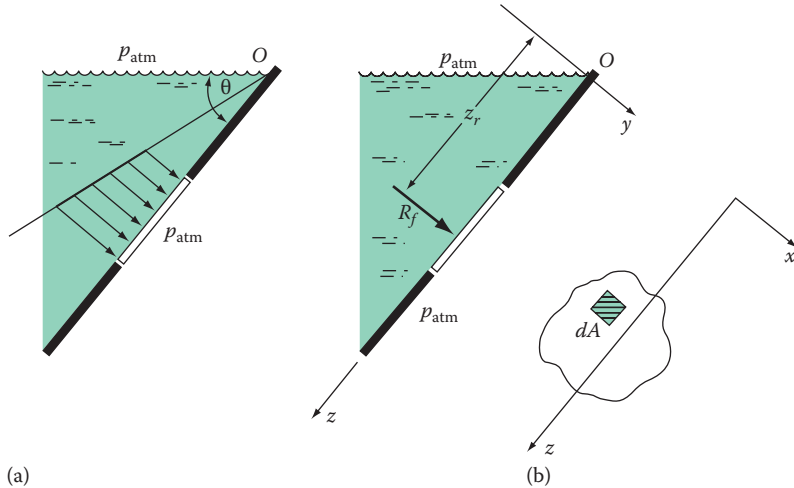


**Figure 2.12** Manometers attached to air lines.

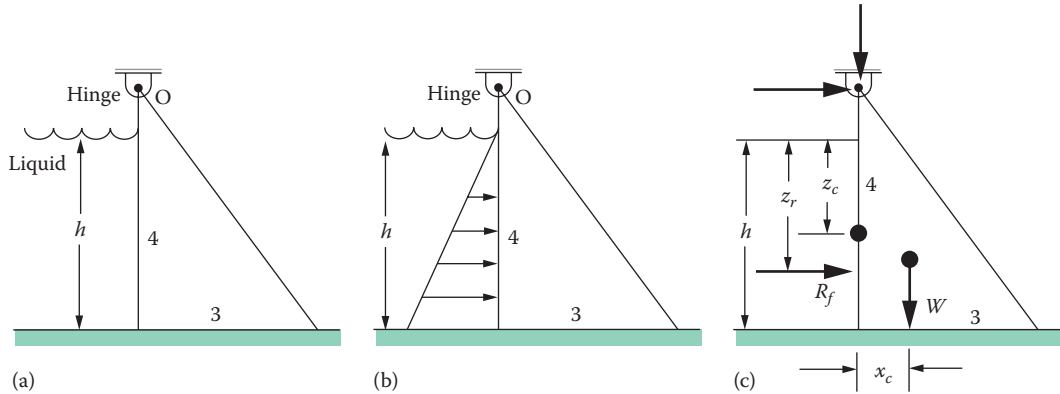




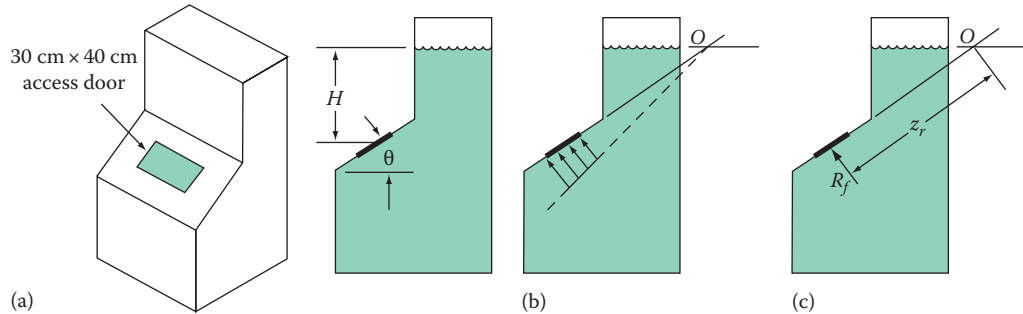
**Figure 2.13** Pressure distribution and equivalent force on a submerged surface.



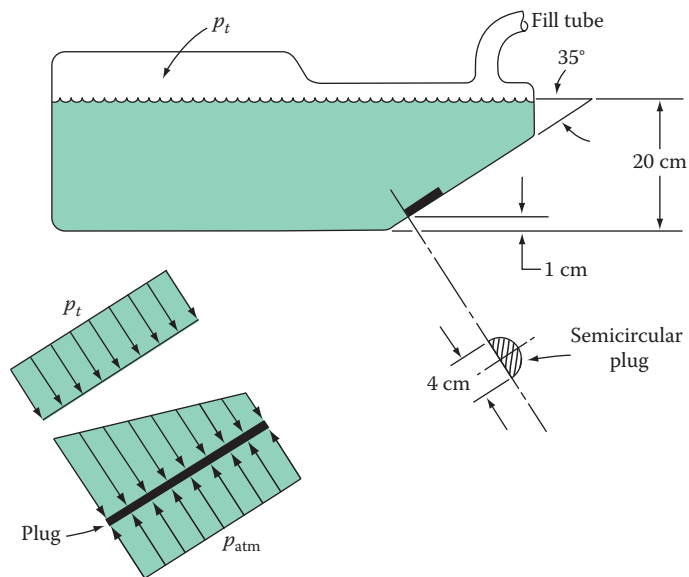
**Figure 2.14** A submerged, inclined plane surface. (a) Profile views and (b) frontal view.



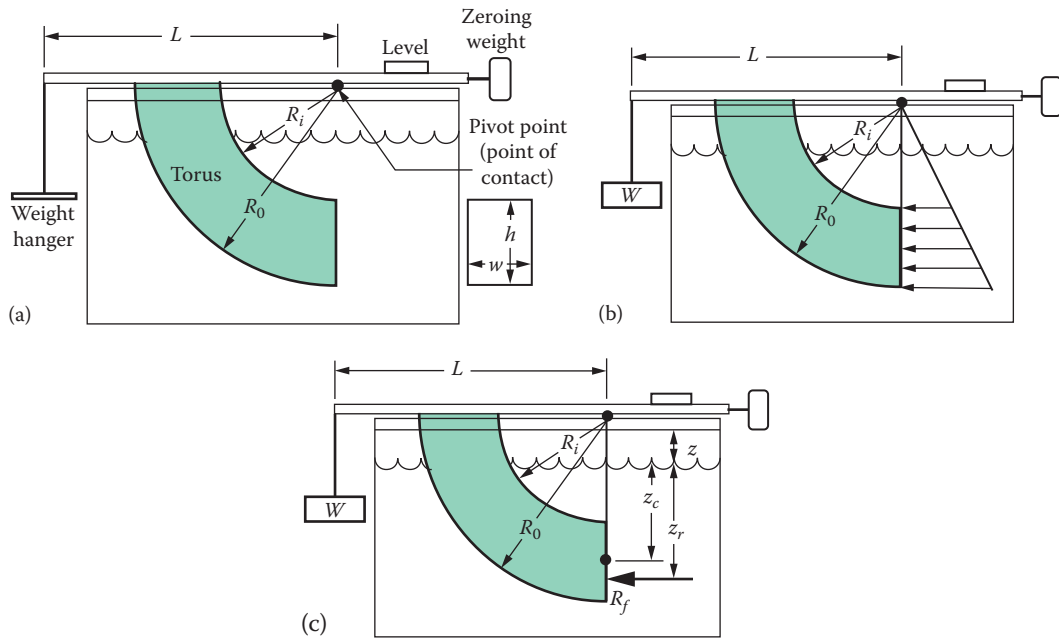
**Figure 2.15** Rectangular gate holding water.



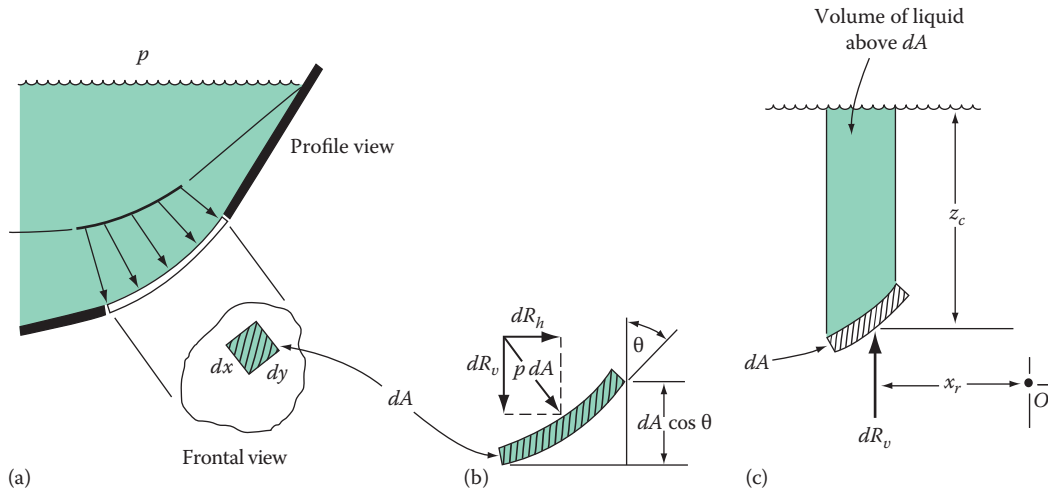
**Figure 2.16** (a) Ice container filled with liquid for Example 2.9. (b and c) Profile views of container showing pressure prism, resultant force, and location.



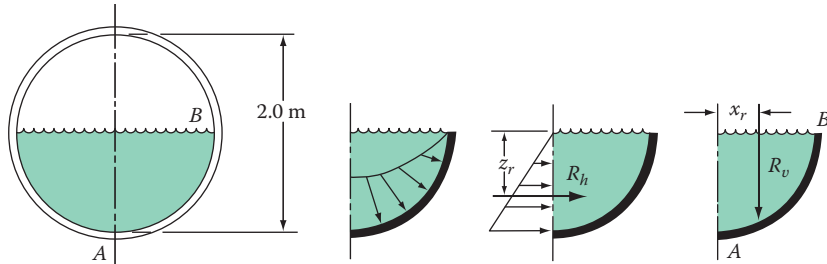
**Figure 2.17** Sketch of a gas tank and plug for Example 2.10.



**Figure 2.18** (a) A schematic of the center of pressure apparatus, (b) the pressure prism, and (c) the free body diagram.

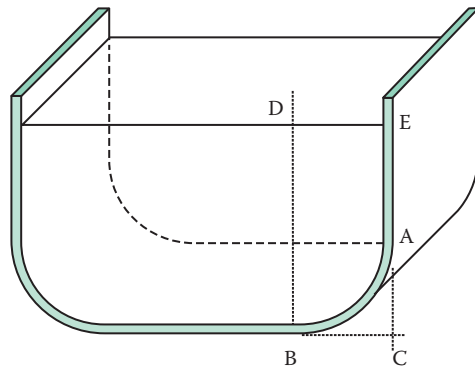


**Figure 2.19** A submerged, curved surface.

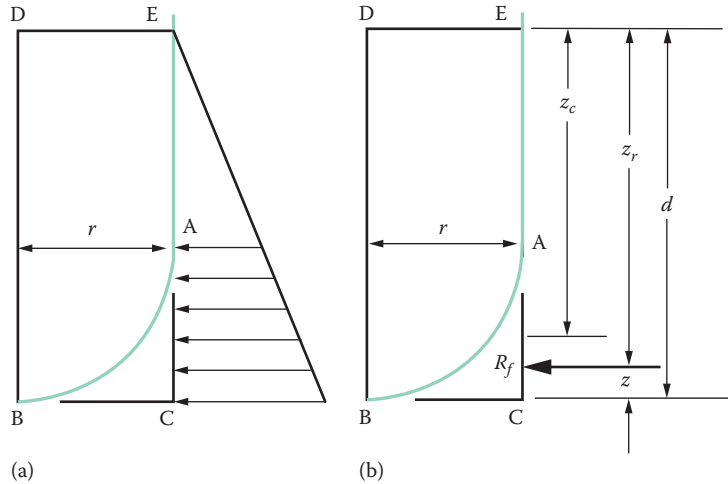


**Figure 2.20** Cross section of a half-filled culvert.

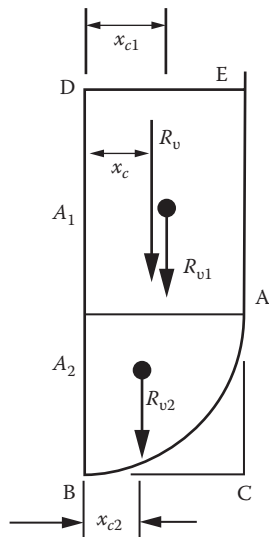




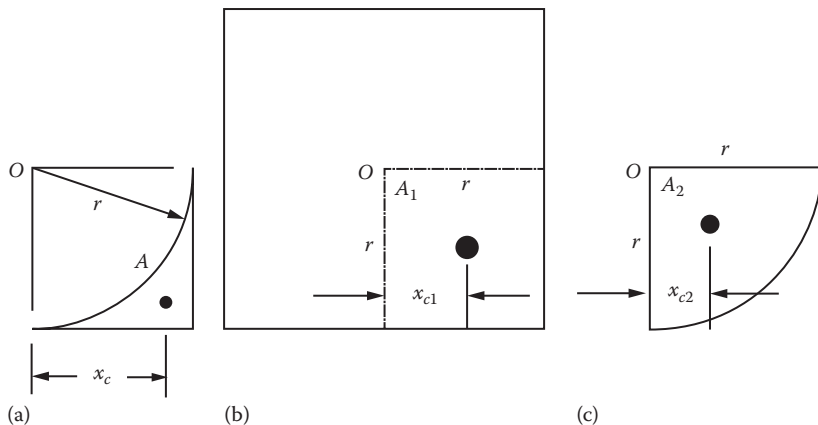
**Figure 2.21** Kerosene tank with rounded corners.



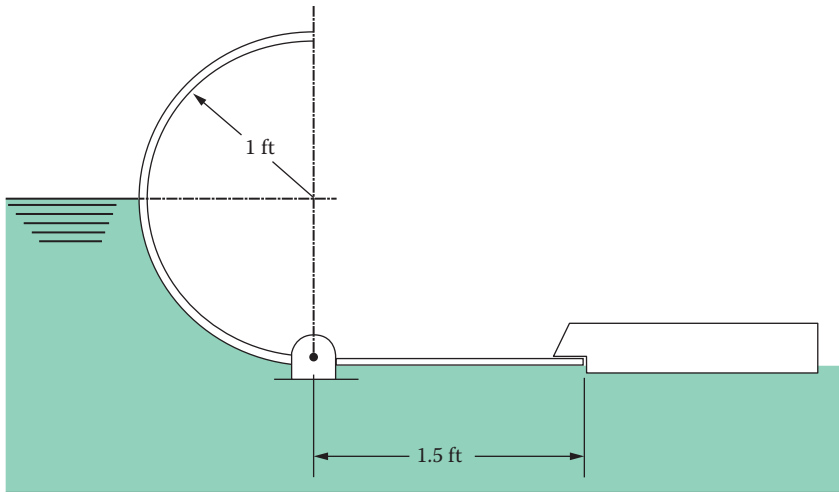
**Figure 2.22** Tank showing the horizontal force acting on AC.



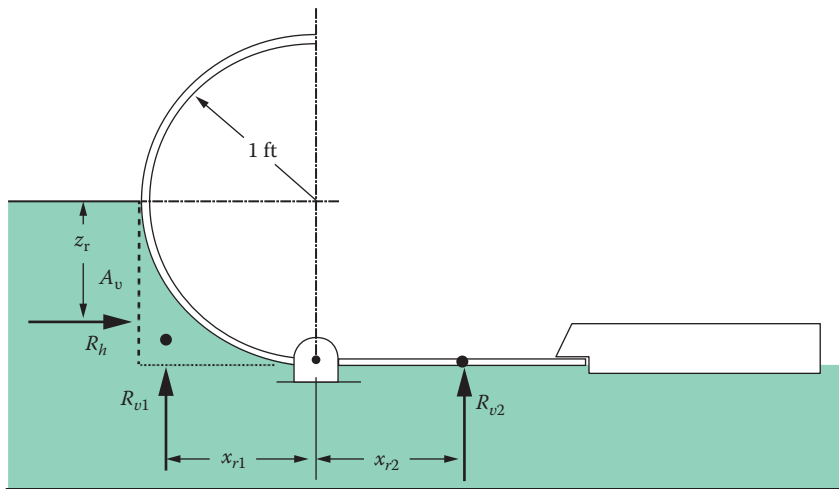
**Figure 2.23** Tank showing the vertical forces acting on  $BC$ .



**Figure 2.24** Ex-quarter circle showing location of centroid as a combination of two other geometries.

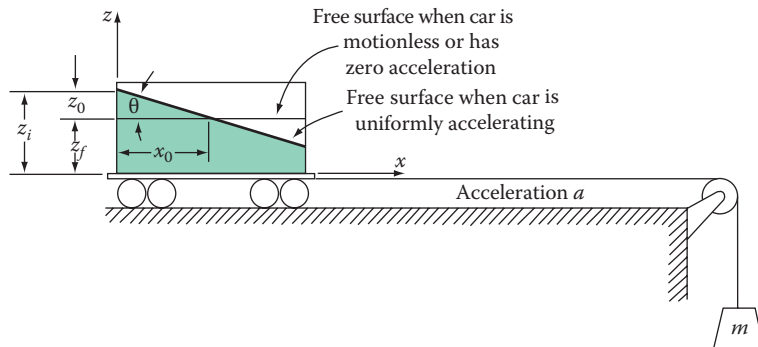


(a)

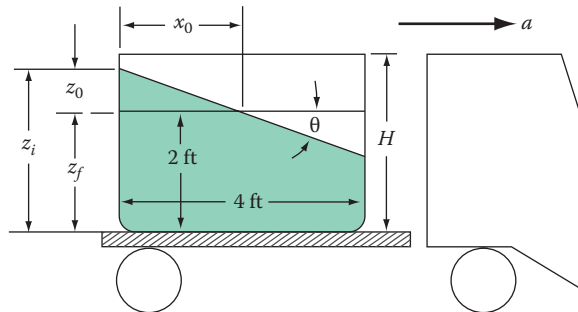


(b)

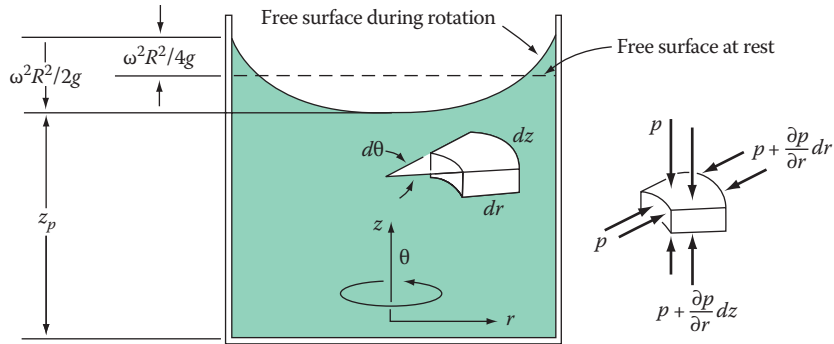
**Figure 2.25** A liquid-retaining gate.



**Figure 2.26** An experiment to investigate a uniformly accelerating liquid.

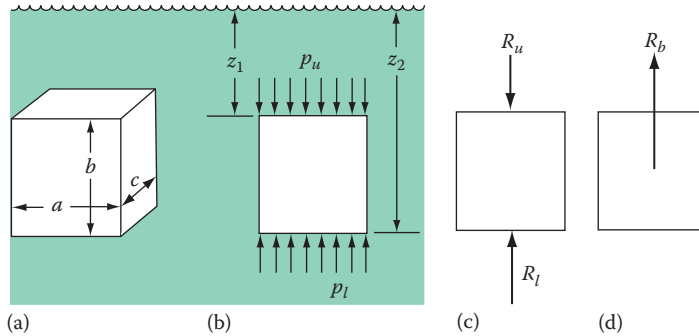


**Figure 2.27** Accelerating truck with tank attached.

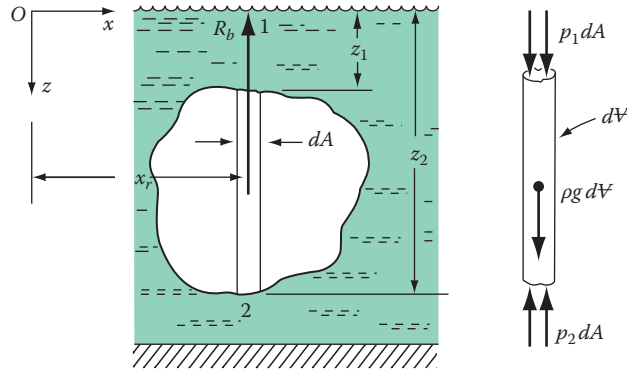


**Figure 2.28** A rotating cylinder of radius  $R$  containing a liquid.

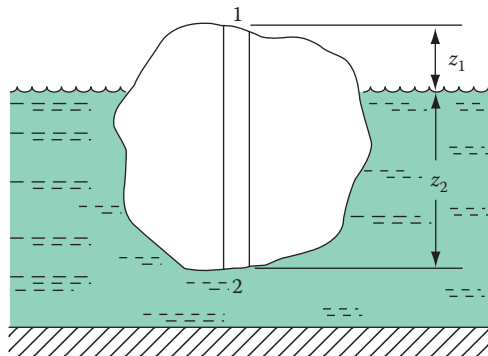




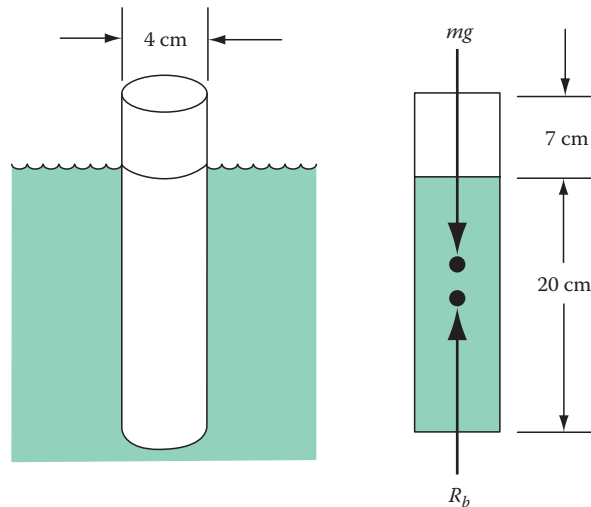
**Figure 2.29** A submerged object and the hydrostatic forces acting on it.



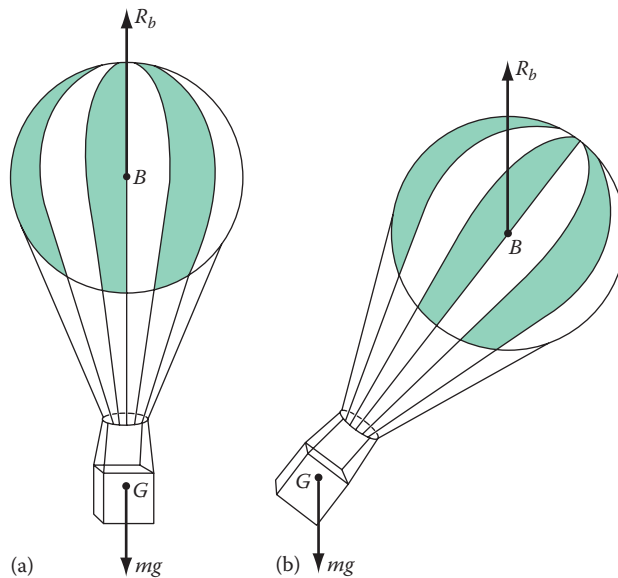
**Figure 2.30** A submerged body.



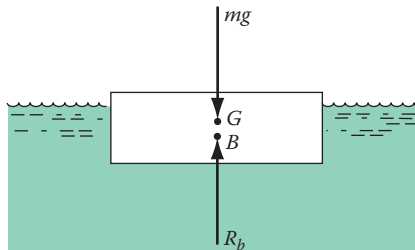
**Figure 2.31** A floating body.



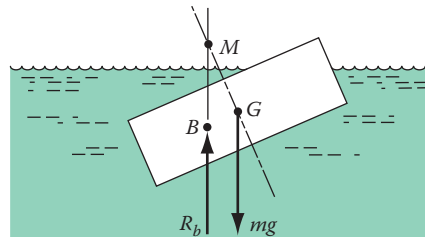
**Figure 2.32** A cylinder floating in the surface of a liquid.



**Figure 2.33** A balloon and basket submerged in air.

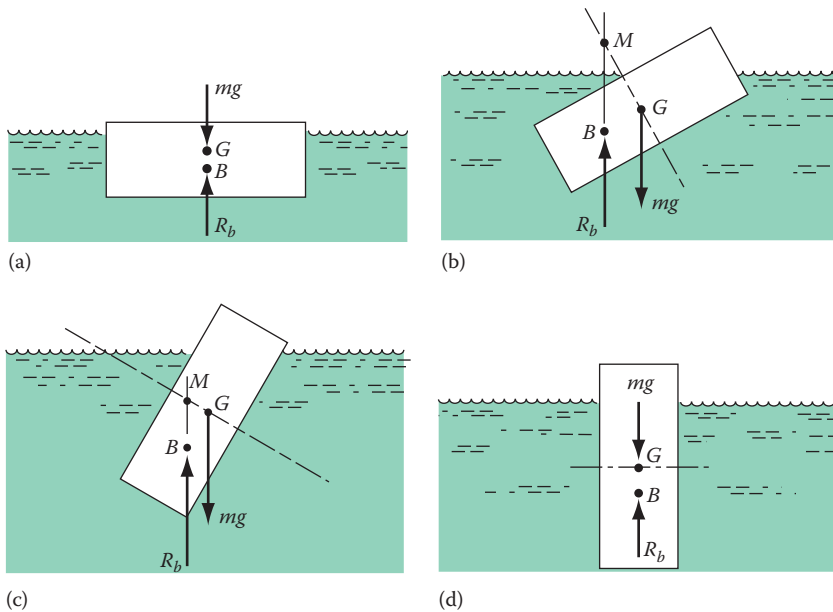


(a)

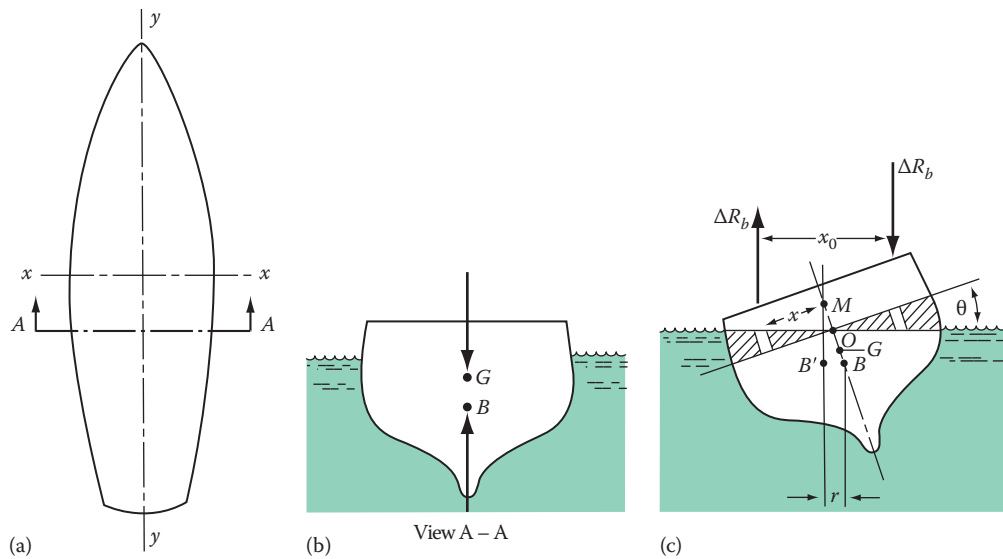


(b)

**Figure 2.34** Stability of a floating body.

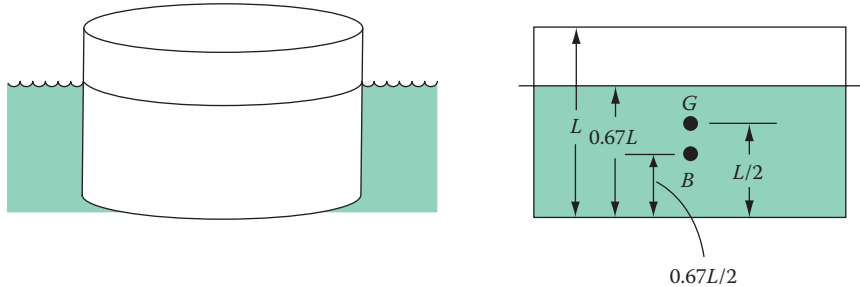


**Figure 2.35** Solution to Example 2.18. (a) 0° stable, (b) 30° clockwise moment; return to 0°;  $M$  above  $G$ ; stable, (c) 60° clockwise moment; return to 0°;  $M$  above  $G$ ; stable, and (d) 90° unstable; any slight disturbance moves  $M$  above  $G$  giving a moment to move soap to 0°.



**Figure 2.36** A sketch for calculating metacentric height.





**Figure 2.37** Floating log with axis vertical showing distances from bottom.

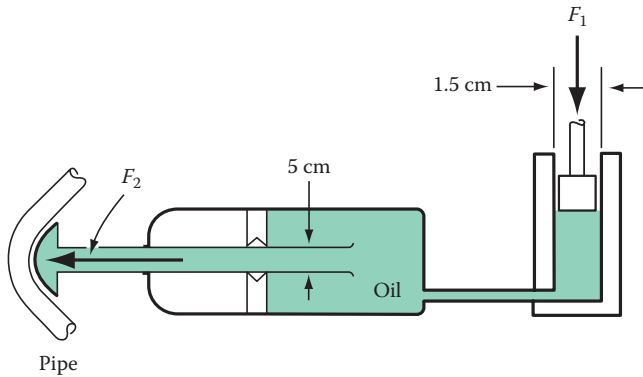


Figure P2.2

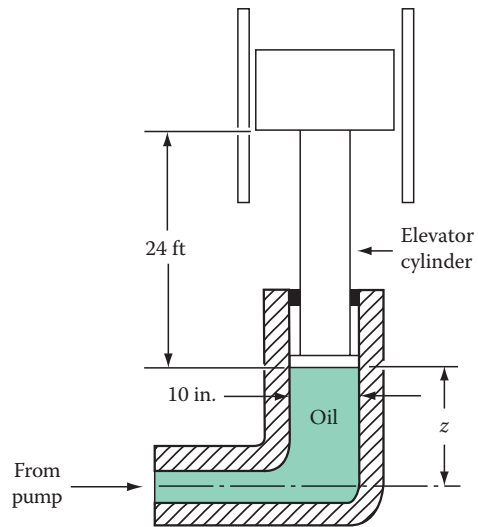
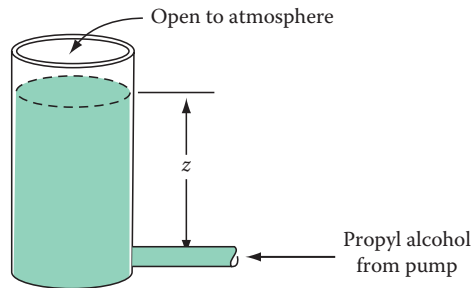
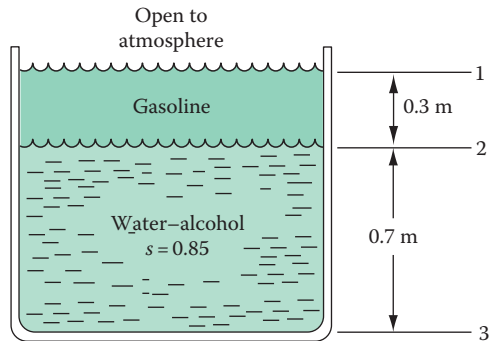


Figure P2.3



**Figure P2.11**



**Figure P2.12**

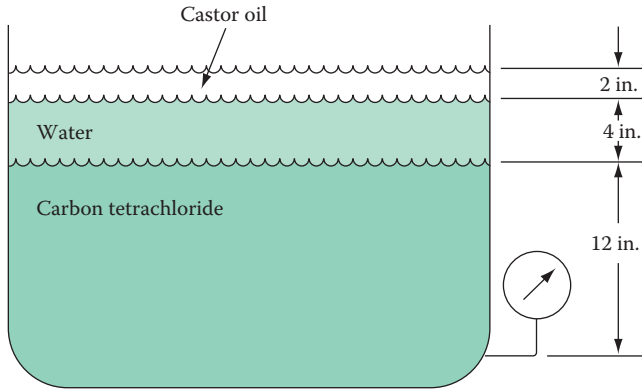
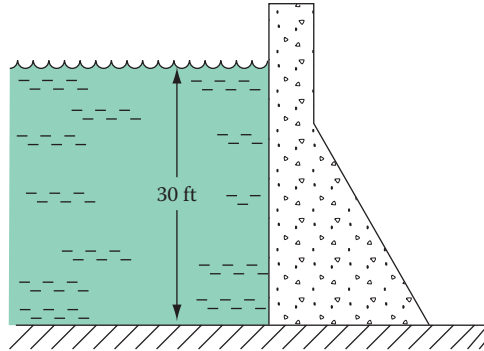
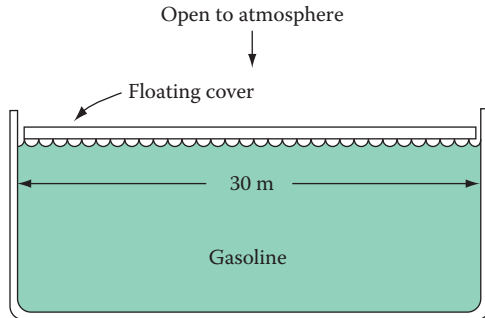


Figure P2.15



**Figure P2.16**



**Figure P2.17**



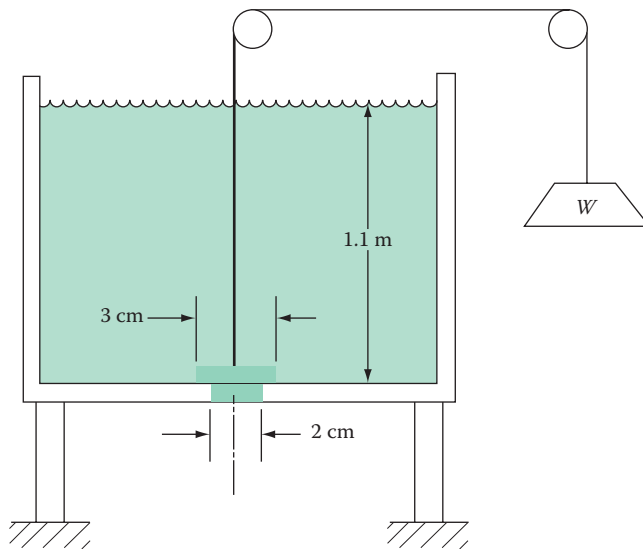
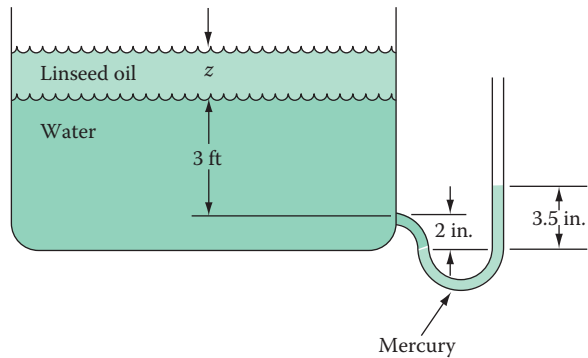


Figure P2.18



**Figure P2.29**

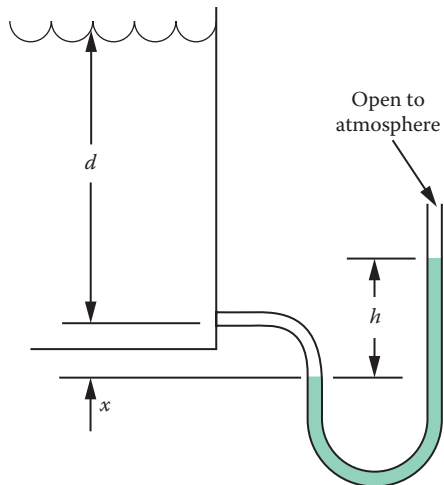
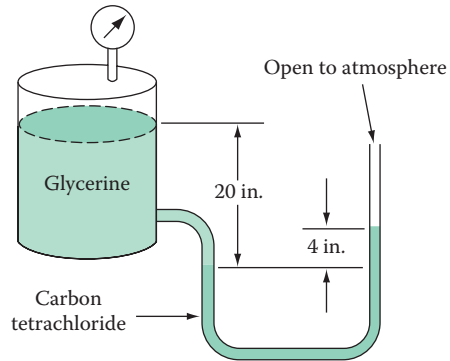


Figure P2.30



**Figure P2.31**

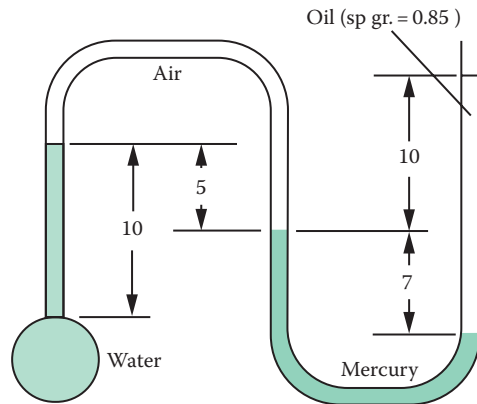
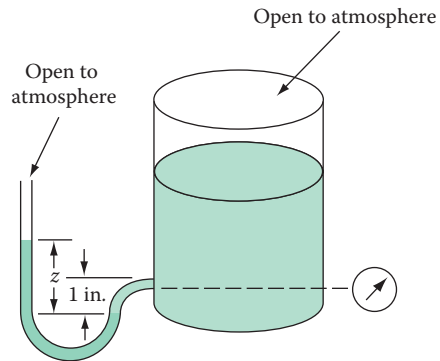
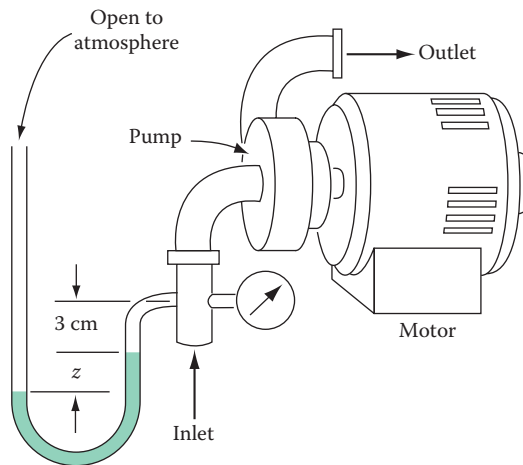


Figure P2.32



**Figure P2.33**



**Figure P2.34**

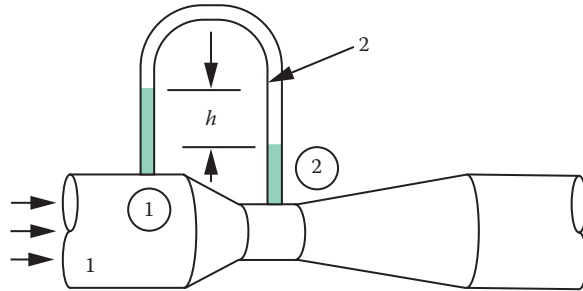
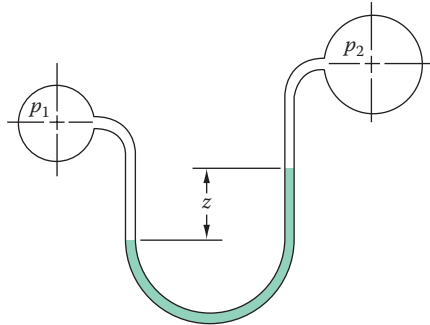
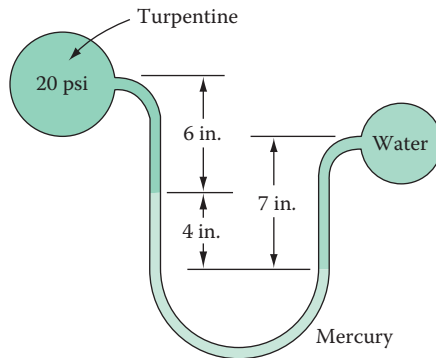


Figure P2.35





**Figure P2.36**



**Figure P2.37**

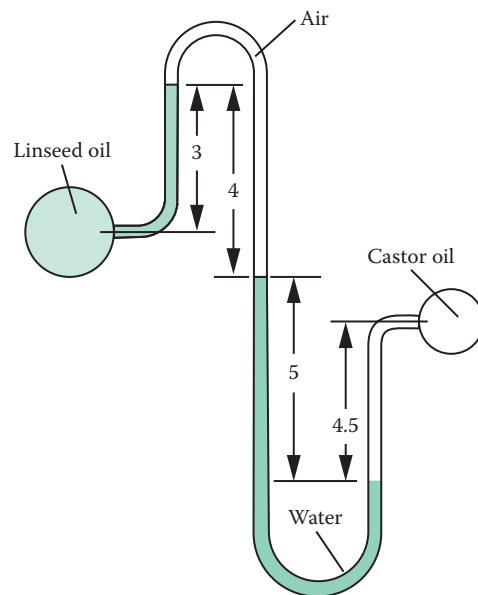


Figure P2.38

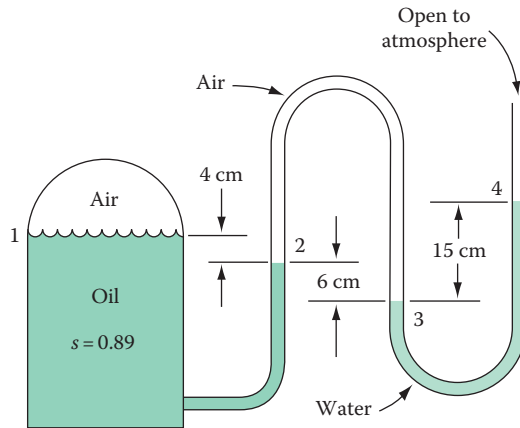


Figure P2.39

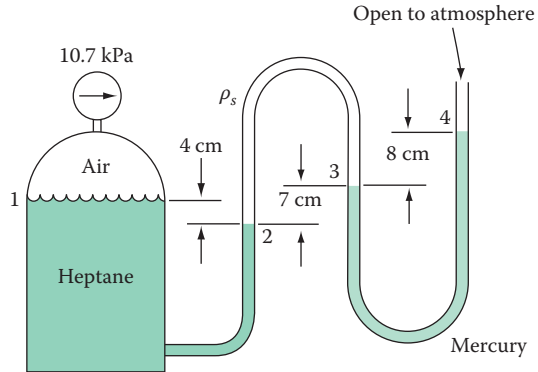


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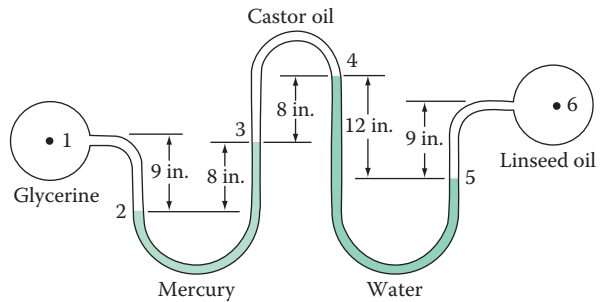


Figure P2.41

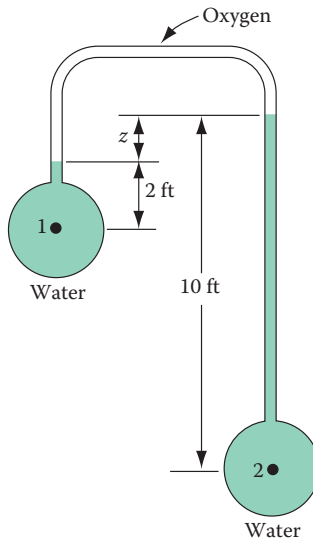
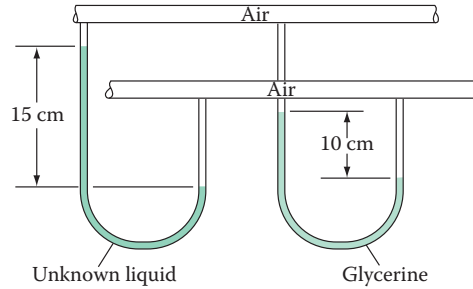
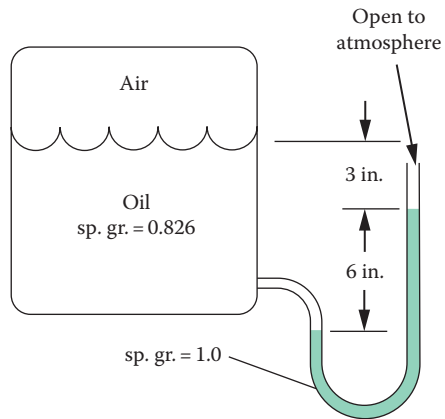


Figure P2.42

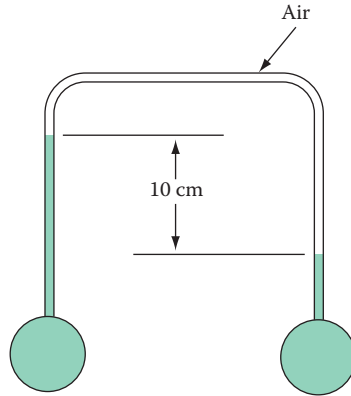


**Figure P2.43**





**Figure P2.44**



**Figure P2.45**

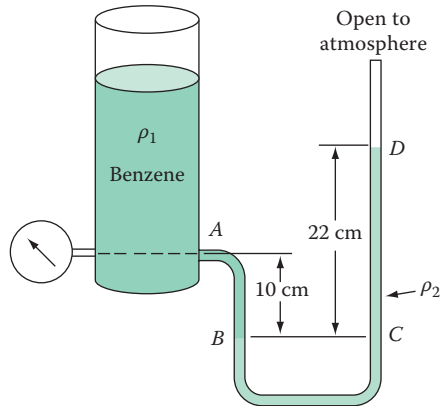


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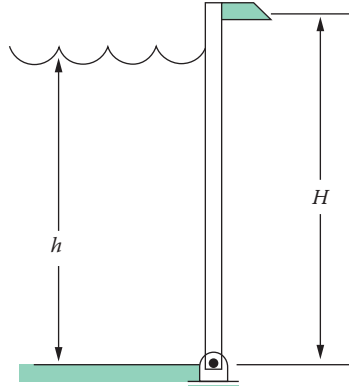


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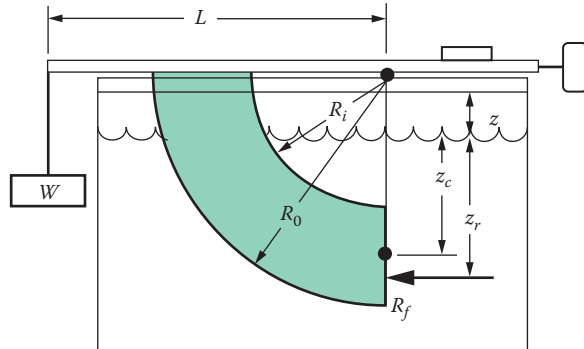


Figure P2.53

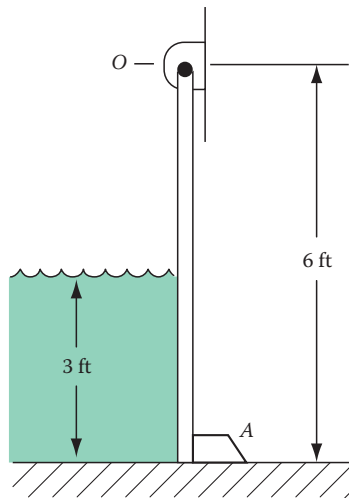
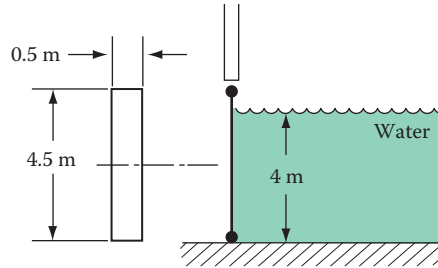


Figure P2.54



**Figure P2.55**

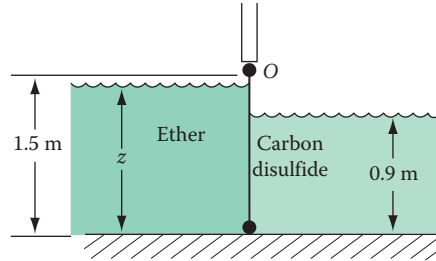


Figure P2.56



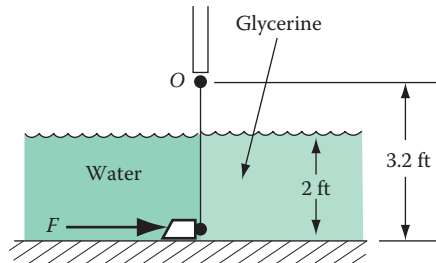


Figure P2.57

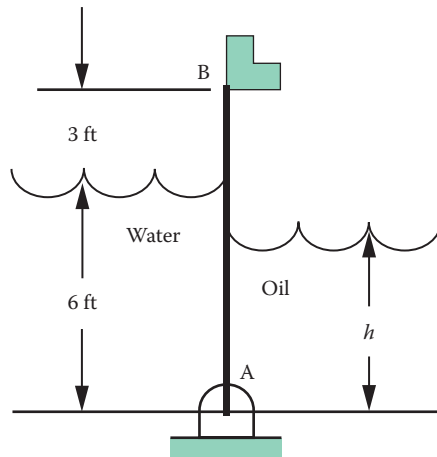


Figure P2.58

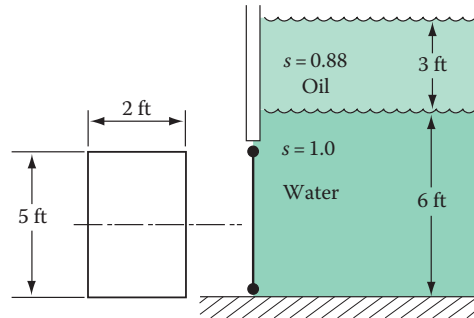


Figure P2.59

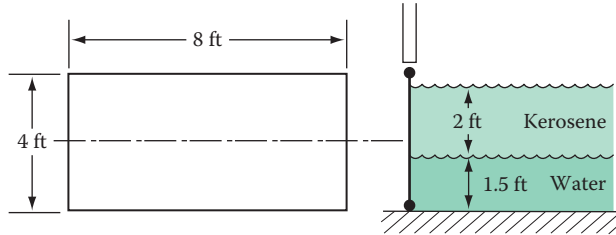


Figure P2.60

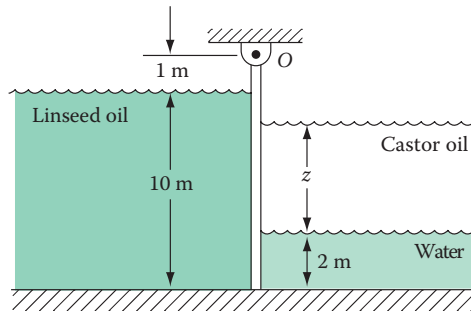
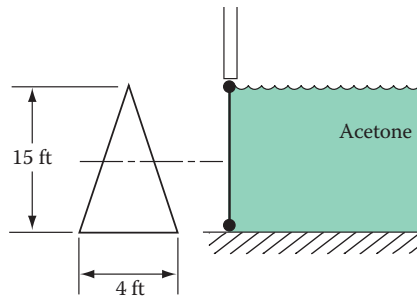
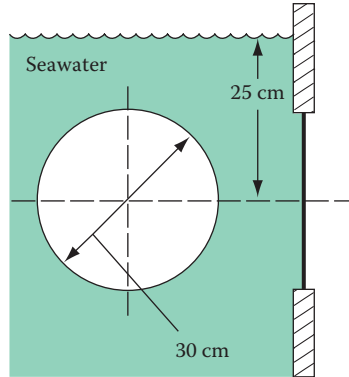


Figure P2.61



**Figure P2.62**



**Figure P2.63**

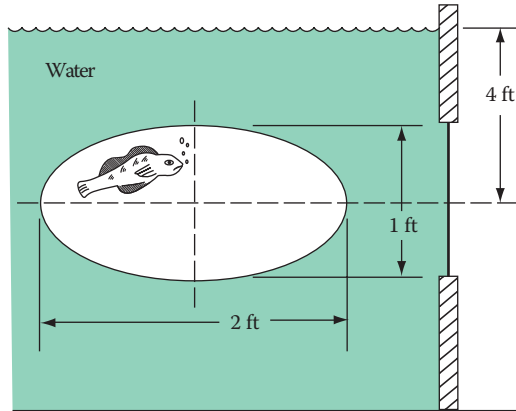
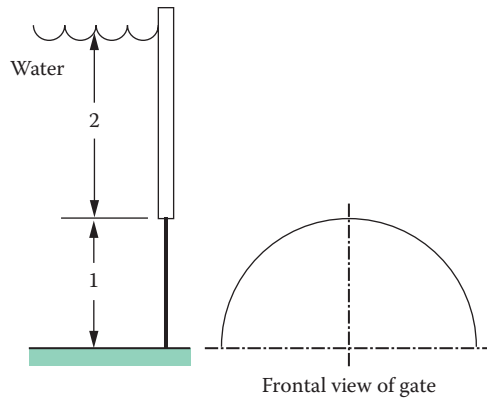


Figure P2.64





**Figure P2.65**

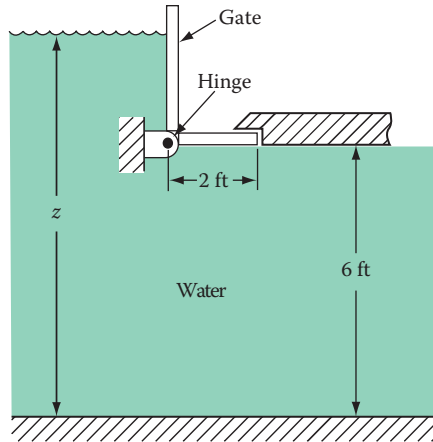


Figure P2.66

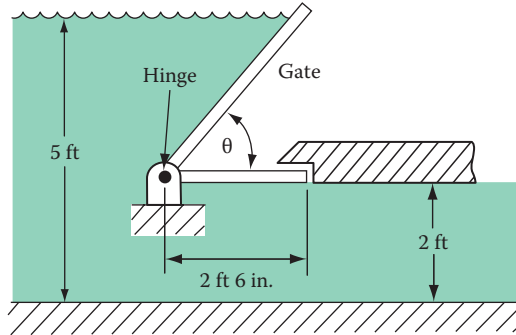
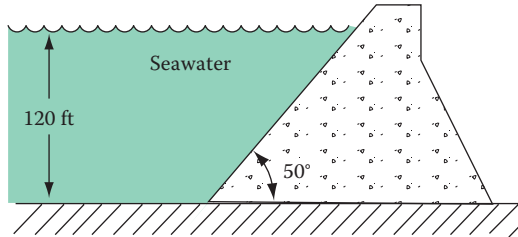


Figure P2.67



**Figure P2.68**

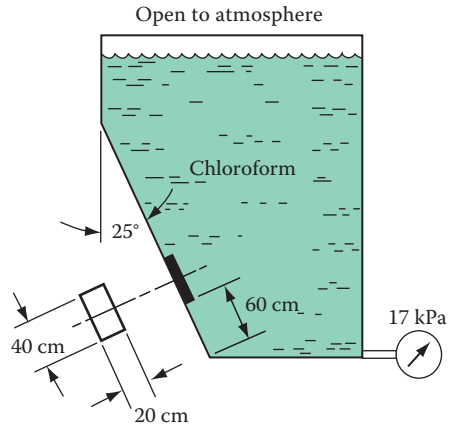
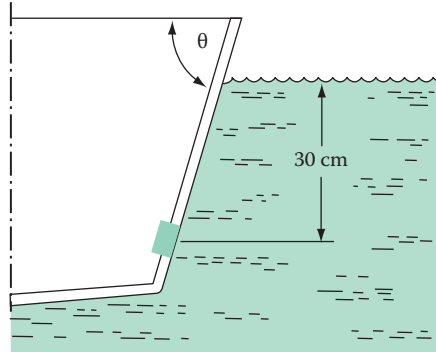
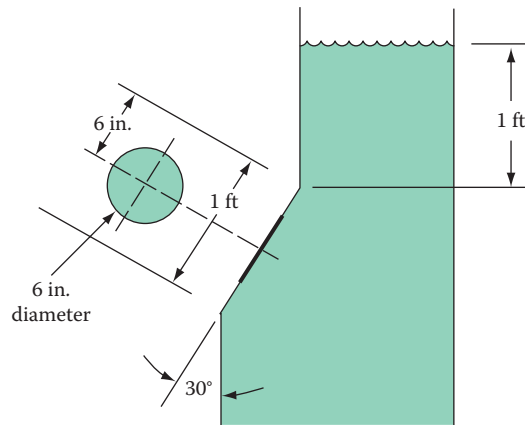


Figure P2.69



**Figure P2.70**



**Figure P2.71**

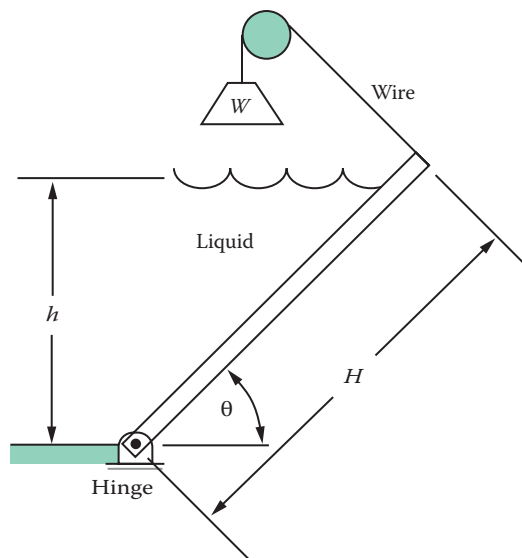


Figure P2.72



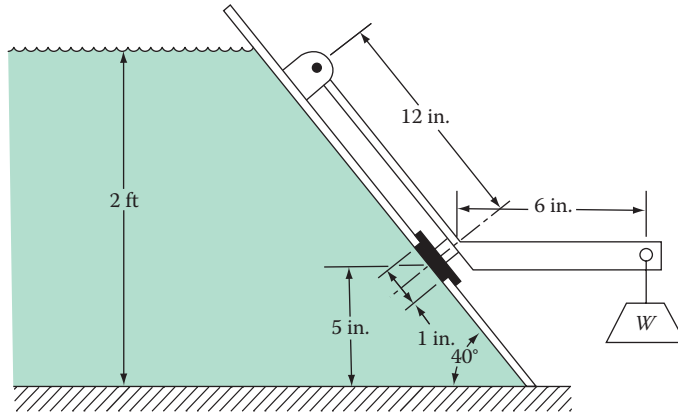
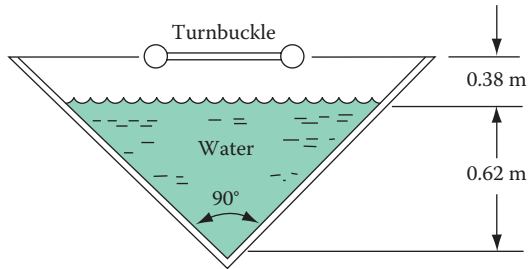
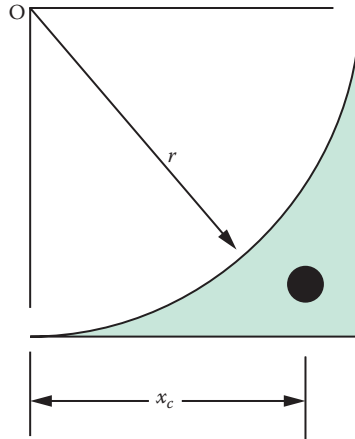


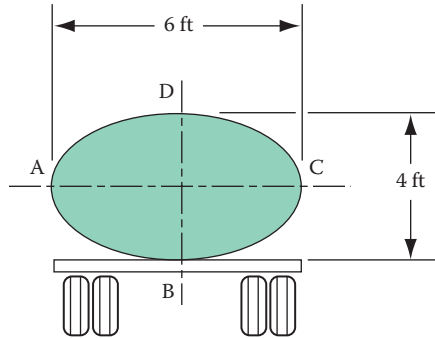
Figure P2.73



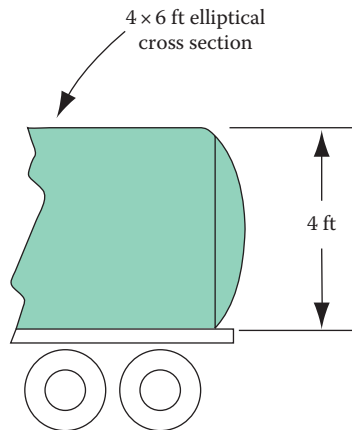
**Figure P2.74**



**Figure P2.75**



**Figure P2.76**



**Figure P2.78**

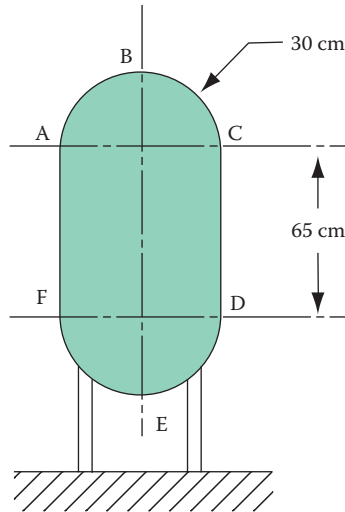


Figure P2.79

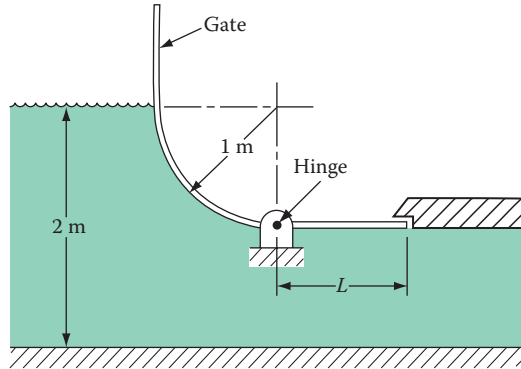
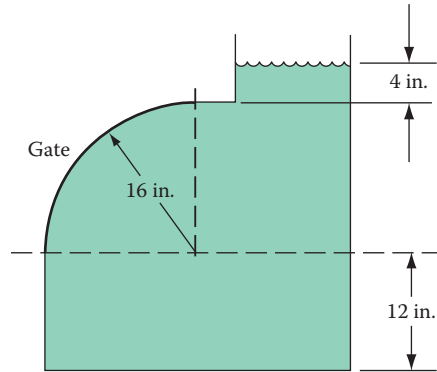
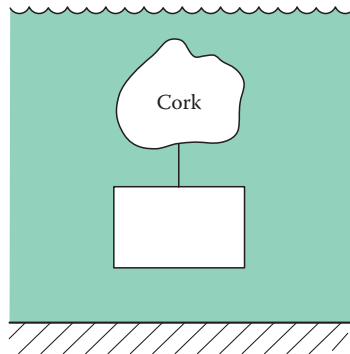


Figure P2.81

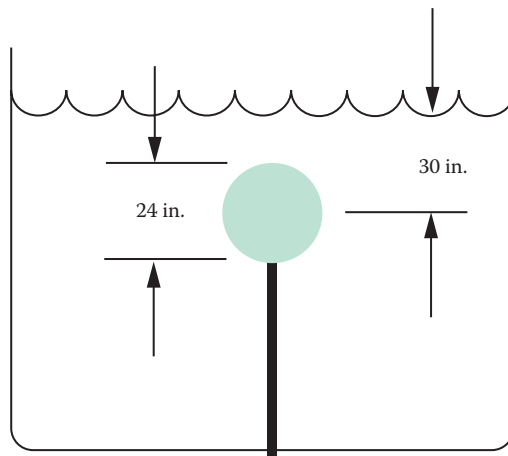


**Figure P2.82**





**Figure P2.91**



**Figure P2.95**

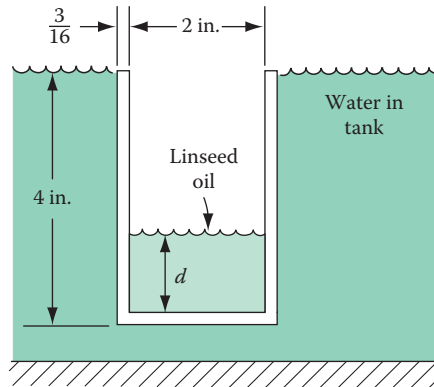


Figure P2.96

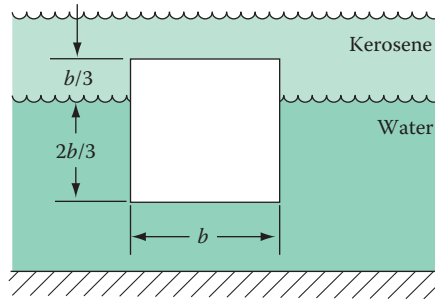


Figure P2.97

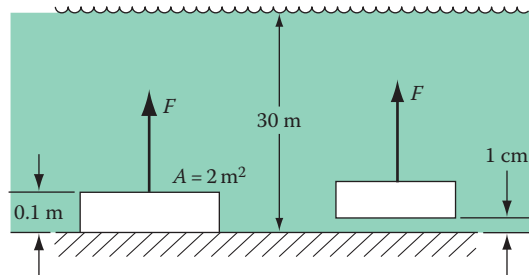
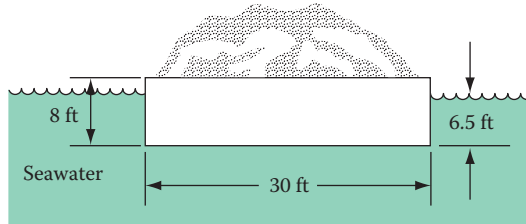
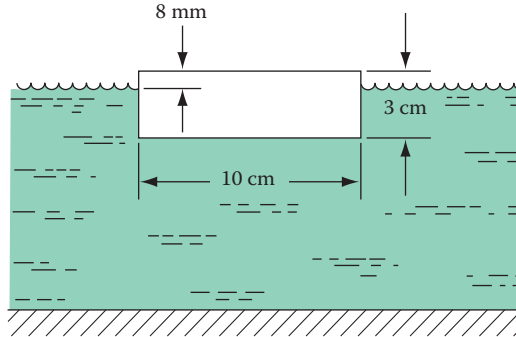


Figure P2.98



**Figure P2.99**



**Figure P2.100**

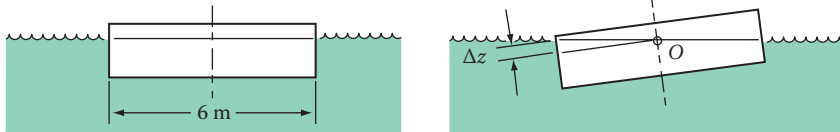


Figure P2.102