Answers to assigned even-numbered problems in Chapter 6

6-2: \( g_{\text{moon}} = 1.62 \text{ m/s}^2 \)
6-12: \( m_{\text{Mars}} = 6.4 \times 10^{23} \text{ kg} \)
6-22: \( T = 5.07 \times 10^3 \text{s} = 84.5 \text{ min} \)
6-26: \( T = 5.07 \times 10^3 \text{s} = 84.5 \text{ min} \)
6-28: \( \rho = 5.50 \text{ gram/cm}^3 \)
6-36: \( m = 6.0 \times 10^{24} \text{ kg} \)
6-50: \( r = 2.0 \times 10^4 \text{ km} \)
6-52: \( T = 2 \text{ hours} \)
6-54: (a) \( F_{\text{Sun}} = 3.5 \times 10^{22} \text{ N} \)
    \( F_{\text{Moon}} = 2.0 \times 10^{20} \text{ N} \)
    (b) The tides occur because the force of the Moon (or Sun) is stronger on one side of the Earth than the other. The proportional change of the Moon’s attraction is much greater than the Sun’s, and so the Moon causes much larger tides.
6-56: (a) \( v = 3.9 \times 10^3 \text{ m/s} \)
    (b) \( T = 12 \text{ hours} \)
6-60: Number of stars = \( 1.7 \times 10^{11} \)