

Phys A - week 6 - Giancoli Ch 6 - Gravity + Orbits

6, 11, 36, 52, 54, 60

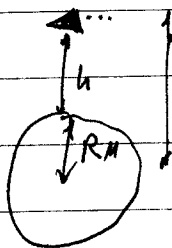
done for wk 3: ✓ ✓ ✓

Q. 6.52

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Apollo orbited Moon at $h = 100 \text{ km} = 10^5 \text{ m}$.

How long did it take to go around Moon once?



$$R = R_M + h =$$

$$F = ma$$

$$\frac{GmM}{R^2} = \frac{mV^2}{R} = \frac{m(2\pi R)^2}{R T^2}$$

Solve for $T =$
algebraically

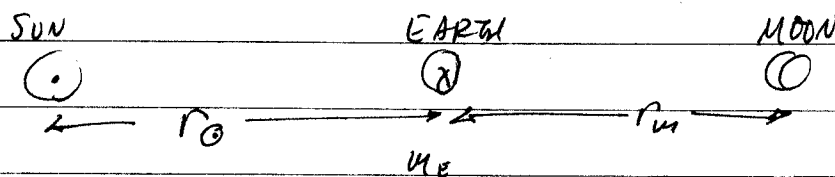
Use $M_{\text{Moon}} = M =$

$R_{\text{Moon}} = R_M =$

Numbers for $T =$

G. 6.54 (a) Calculate F of Sun on Earth, and of Moon on Earth.

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$$M_0 =$$

$$M_m =$$

$$F_0 = \frac{GM_0 m_E}{r_0^2} =$$

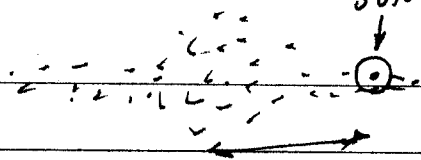
$$F_m = \frac{GM_m m_E}{r_m^2} =$$

(b) If the Sun's $F_0 \gg F_m$, how come Moon has a greater effect on Earth's tides?

re:

MILKY WAY GALAXY

SUN orbits center of MW with:



$$v = 30,000 \text{ ly/yr} \left| \frac{m}{\text{ly}} \right| = \text{---} m$$

$$T = 200 \times 10^6 \text{ yr} \left| \frac{\text{sec}}{\text{yr}} \right| = \text{---} \text{sec}$$

(a) How much mass in the MW inside Sun's orbit?

$$F = ma$$

$$\frac{GMm}{r^2} = m \left(\frac{v^2}{r} \right) = \frac{m}{r} \left(\frac{2\pi r}{T} \right)^2 \rightarrow \text{Solve for } M \text{ algebraically}$$

(then insert numbers)

$$M =$$

(b) How many ^N solar masses is this? $M_{\odot} = 2 \cdot 10^{30} \text{ kg}$

$$M = N M_{\odot} \rightarrow N =$$