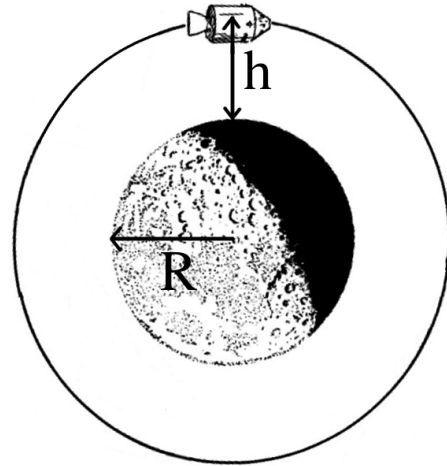


Answer all question on a separate sheet. Please be as neat as you can. Show all work, including units. Circle your final answer clearly.

The velocity of a spacecraft in orbit around the Moon is:

$$V \text{ [km/s]} = \frac{70}{\sqrt{h + R}}$$

where h is the height above the lunar surface [km]
and $R = 1,731$ km.



1 (5 pts) The Apollo command module orbits at an altitude of $h = 110$ km above the lunar surface. Calculate how fast it is moving.

The total distance around an orbit is simply: Distance [km] = $2\pi \times (h + R)$

2 (5 pts) Calculate how far the Apollo command modules travels in one lunar orbit ($h = 110$ km).

3 (10 pts) Calculate how long it takes the Apollo command module to orbit the Moon (your answer will be in seconds).

4 (5 pts) Convert your orbit time to hours (1 hour = 3,600 seconds).