## ADVANCED PHYSICS CLUB

#### FEBRUARY 10, 2019

# TODAY'S MEETING

Today we continued discussing Kepler's laws and gravity.

We reviewed the homework problem to show that the sum of distances to any point on the ellipse from the two focal points is equal to the major axis.

#### DISCUSSED PROBLEMS

- 1. Somebody suddenly stops the Moon. How much time until it falls on the Earth? (Answer: month/ $\sqrt{32}$ .)
- 2. (Hooke's gravity train): points A, B on Earth are connected by a straight tunnel. Compute the time from A to be B through the tunnel. Show it is independent of A, B. Assume the density of the Earth is constant. Estimate the travel time. Wikipedia: "Gravity train'

Homework

1. Find the maximum speed in the tunnel as a function of the acceleration at the Earth's surface g, Earth's radius R, and the minimal distance of the tunnel from the Earth's center H,

# FOR THE NEXT MEETING

The next club's meeting is at 2:40pm, room P-131, on Sunday, February 10.