1. The closest approach distance between Mars and Earth is about 56 million km. Assume you can travel in a spaceship at 58,000 km/h, which is the speed achieved by the New Horizons space probe that went to Pluto and is the fastest speed so far of any space vehicle launched from Earth. How long (in days) would it take to get to Mars at the time of closest approach? Show your work.
2. Calculate the wind speed (in km/hr or mph) at the edge of Neptune’s Great Dark Spot, which was 10,000 km in diameter and rotates in 17 days. Show your work.
3. What is the phase of the Moon if it . . .
   1. rises at 3:00 p.m.? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. is highest in the sky at sunrise? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. sets at 10:00 a.m.? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. A car accident occurs around midnight on the night of a full moon. The driver at fault claims he was blinded momentarily by the Moon rising on the eastern horizon. Should the police believe him?
5. The secret recipe to the ever-popular veggie burgers in the college cafeteria is hidden in a drawer in the director’s office. Two students decide to break in to get their hands on it, but they want to do it a few hours before dawn on a night when there is no Moon, so they are less likely to be caught. What phases of the Moon would suit their plans?

Hints for questions 1 and 2:

Hint 1: You’re working with the equation, distance = rate \* time. For the first, you’re solving for time. For the second, you’re solving for rate, but have make some decisions on how to estimate the distance. You also need to convert the time from days to hours.

Hint 2: For the purposes of this homework, you can assume Neptune’s Great Dark Spot is circular. So the distance the wind would cover at the edge is same as the circumference of a circle.

Hint 3: The circumference of a circle is , where d is the diameter of the circle.