1. Consider the following star system.



5x1031kg

1. Find the gravitational attraction between the star and the planet.

1. Use your answer in (a) and Newton’s 2nd law of motion to find the planet’s centripetal acceleration.

1. Use your answer from (b) to find the kinetic energy of the planet.

1. Use your answer from (c) to find the planet’s gravitational potential energy.

1. How far would the planet need to be for the gravitational force to be ¼ of its value from answer (a)?

1. What is the planet’s centripetal acceleration at the distance you calculated in (e)?
2. Consider the following scenario:



1. Calculate the gravitational force between the ball and the Earth.

1. What is this force also known as?

1. Use your answer in a to find the acceleration of the ball when dropped.
2. What is this acceleration also known as?

1. Use your answers in parts (c) & (d) to find the ball’s gravitational potential energy at height “h”.

1. What is the magnitude of the ball’s kinetic energy when it hits the Earth (neglect air resistance)?