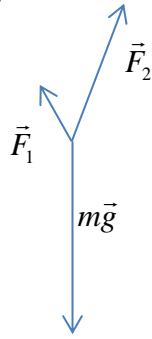


2014 Exam 2 Answers

a)



b) $\vec{F}_2 = \langle 300, 1362, 0 \rangle \text{N}$

2) a) d c b

b) c a g

c) A. Increasing

d) B. Decreasing

3) a) $6.12 \times 10^{-10} \text{J}$ b) $2.39 \times 10^{-9} \text{J}$ c) $1.78 \times 10^{-9} \text{J}$

4) 1.46 m/s

5) $3.34359 \times 10^{-27} \text{kg}$

6) 3.09 m/s

7) b) $\sqrt{v_i^2 + 2G \left(\frac{1}{r_f} - \frac{1}{r_i} \right)}$

8) $6.72 \times 10^5 \text{J}$

9) a) $3.38 \times 10^{41} \text{kg}$ b) $1.69 \times 10^{11} \text{ suns}$

10) pos = (25, 12, 3), r = 0.035
 Baseball.m = 0.155
 Baseball.p = Baseball.m * vector(40, 30, 0)
 A = pi * Baseball.r ** 2

Inside the loop

```

pmag = mag(Baseball.p)
F_air = -0.5*d*C*A*pmag*Baseball.p/Baseball.m**2
F_earth = Baseball.m*vector(0,-g,0)
Fnet = F_air + F_earth
Baseball.p = Baseball.p + Fnet*deltat
    
```

11)

