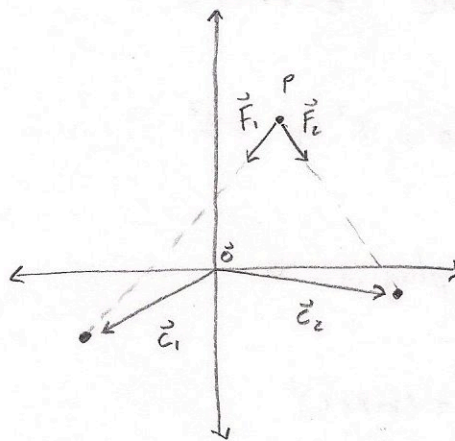


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Raúl Reyes

Math 130

H.W. #3



$$1) \quad m \ddot{\vec{r}} = \vec{F}_1(\vec{r}) + \vec{F}_2(\vec{r})$$

$$\vec{F} = -\gamma \frac{\vec{r}}{r^3}$$

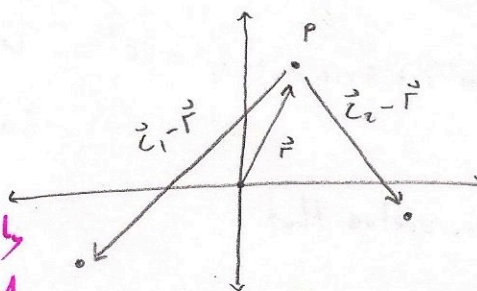
So,

$$m \ddot{\vec{r}} = \gamma_1 \frac{\vec{c}_1 - \vec{r}}{\|\vec{c}_1 - \vec{r}\|^3} + \gamma_2 \frac{\vec{c}_2 - \vec{r}}{\|\vec{c}_2 - \vec{r}\|^3}$$

$$m \ddot{\vec{r}} = -\gamma_1 \frac{\vec{r} - \vec{c}_1}{\|\vec{r} - \vec{c}_1\|^3} - \gamma_2 \frac{\vec{r} - \vec{c}_2}{\|\vec{r} - \vec{c}_2\|^3}$$

$$\gamma_1 = G M_1 m \quad \gamma_2 = G M_2 m$$

Beautifully expressed.



$$2) \quad x, y, r \quad ; \quad r = \sqrt{x^2 + y^2}$$

Linear equation: $Ax + Bx + Cy = D$

Def. Conics: Solution to quadratic eqt. in x, y

$$\text{So, } Ax + Bx + Cy = D$$

$$Ax = D - Bx + Cy$$

$$Ax^2 = (D - Bx + Cy)^2$$

$$Ax^2 + y^2 = (D - Bx + Cy)^2$$

Solution to quadratic eqt.