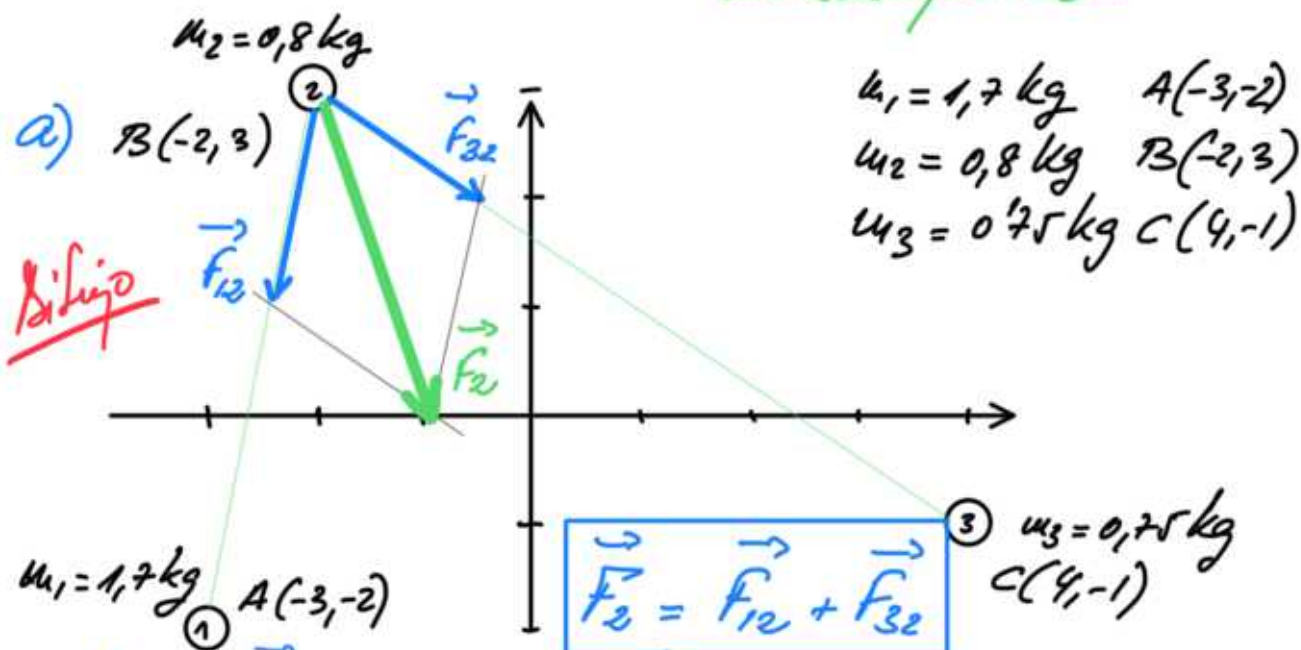


EXERCÍCIO FQ1BE3055:

"achimages.com"



b) $\vec{F}_{12} = -G \frac{m_1 m_2}{r_{12}^2} \frac{\vec{r}_{12}}{r_{12}} = \dots$

$\vec{r}_{12} = \vec{i} + 5\vec{j} \Rightarrow |\vec{r}_{12}| = \sqrt{1^2 + 5^2} = \sqrt{26} \text{ m}$

$\dots = -6,67 \cdot 10^{-11} \frac{1,7 \cdot 0,8}{(\sqrt{26})^2} \frac{\vec{i} + 5\vec{j}}{\sqrt{26}} =$

$$\vec{F}_{12} = -6,84 \cdot 10^{-13} \vec{i} - 3,42 \cdot 10^{-12} \vec{j} \text{ (N)}$$

c) $\vec{F}_{32} = -G \frac{m_3 m_2}{r_{32}^2} \frac{\vec{r}_{32}}{r_{32}} = \dots$

$\vec{r}_{32} = -6\vec{i} + 4\vec{j} \Rightarrow |\vec{r}_{32}| = \sqrt{36 + 16} = \sqrt{52} \text{ m}$

$\dots = -6,67 \cdot 10^{-11} \frac{0,75 \cdot 0,8}{(\sqrt{52})^2} \frac{-6\vec{i} + 4\vec{j}}{\sqrt{52}} =$

$$\vec{F}_{32} = 6,4 \cdot 10^{-13} \vec{i} - 4,27 \cdot 10^{-13} \vec{j} \text{ (N)}$$

$$\vec{F}_2 = \vec{F}_{12} + \vec{F}_{32} = -4,4 \cdot 10^{-14} \vec{i} - 3,85 \cdot 10^{-12} \vec{j}$$

d) $|\vec{F}_2| = \sqrt{(-4,4 \cdot 10^{-14})^2 + (-3,85 \cdot 10^{-12})^2} =$

Módulo

$$F_2 = 3,85 \cdot 10^{-12} \text{ N}$$

e) Aceleración sobre m_2 :

$$\vec{F} = m \cdot \vec{a} \Rightarrow \vec{a} = \frac{\vec{F}}{m} \Rightarrow \vec{a}_2 = \frac{\vec{F}_2}{m_2}$$

$$\vec{a}_2 = \frac{-4,4 \cdot 10^{-14} \vec{i} - 3,85 \cdot 10^{-12} \vec{j}}{0,8}$$

$$\vec{a}_2 = -5,5 \cdot 10^{-14} \vec{i} - 4,81 \cdot 10^{-12} \vec{j} \left(\frac{m}{s^2} \right)$$

$$|\vec{a}_2| = \sqrt{(-5,5 \cdot 10^{-14})^2 + (-4,81 \cdot 10^{-12})^2}$$

$$|\vec{a}_2| = 4,81 \cdot 10^{-12} \text{ m/s}^2$$