VECTORS

Chapter 7 –Applications of Vectors

(*Material adapted from Chapter 7 of your text*)

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MATH@TD

Chapter 7 – Applications of Vectors

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7.1 & 7.2 Vectors as Force and Acceleration

Both **force** and **velocity** are 'real world' qualities which have **magnitude** (size) and **direction**. Thus we can use the mathematics of vectors to solve "real world problems".

Example 7.1.1

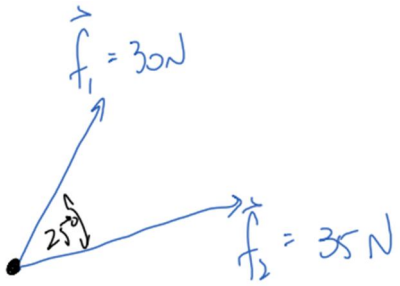
A box is being pushed along the floor by Fred and Sally. Fred pushes the box with a force of $35N\ [right]$. Sally pushes with a force of:

a) $40N\ [right]$ b) $40N\ [left]$

For a) and b) determine i) the resultant force $\vec{f_r}$ and ii) the equilibrant of the system $\vec{e}$.

Example 7.1.2

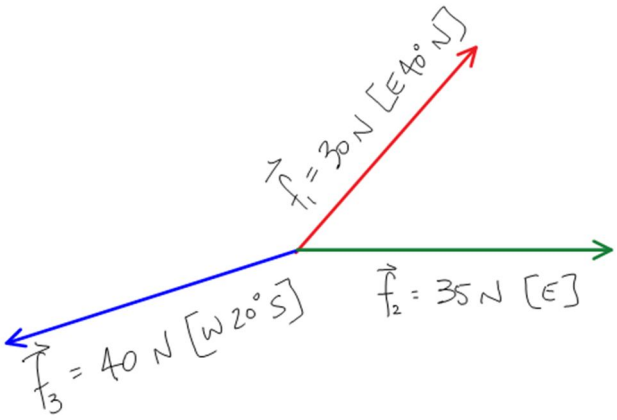
Given the diagram of a system of forces, determine the resultant force $\vec{f_r}$, and the equilibrant $\vec{e}$.



Example 7.1.3

Consider the following sketch of a system of forces:

Determine $\vec{f}_r$.

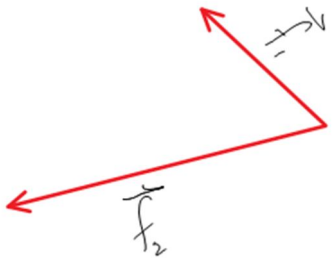


Another look at Equilibrium

Recall that a system of vectors in can be represented by two "opposite" vectors:

Example 7.1.4

Given that three forces $\vec{f_1}$, $\vec{f_2}$, and $\vec{f_3}$ are in equilibrium, with $\vec{f_1}$ and $\vec{f_2}$ as shown, determine $\vec{f_3}$ (as a sketch).



Class/Homework for Section 7.1

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