Answer on Question #82946, Physics / Electromagnetism

Question:

Imagine sitting with two friends around a table, where all three of you have different masses.
Calculate the magnitude and direction of the gravitational field in the centre of the table due to your
three masses

Solution:

The intensity of the gravitational field equals to $\bar{I} = G\dfrac{m}{r^3}\ \bar{r}$ where m is a mass producing the

field, $\bar{r}$ is the proper radius-vector, directed from the center to m. Respectively the net intensity is

$\bar{I}_n = G\sum\limits_1^3 \dfrac{m_i}{r_i^3}\bar{r_i}$, the magnitude of the gravitational field in the centre M is $M = \text{mod}(\bar{I}_n)$

and the direction corresponds to $\bar{I}_n$ direction.

The answer:

The net intensity is $\bar{I}_n = G\sum\limits_1^3 \dfrac{m_i}{r_i^3}\bar{r_i}$, the magnitude of the gravitational field in the centre M is

$M = \text{mod}(\bar{I}_n)$ and the direction corresponds to $\bar{I}_n$ direction.