11. We use m_1 for the 20 kg of the sphere at $(x_1, y_1) = (0.5, 1.0)$ (SI units understood), m_2 for the 40 kg of the sphere at $(x_2, y_2) = (-1.0, -1.0)$, and m_3 for the 60 kg of the sphere at $(x_3, y_3) = (0, -0.5)$. The mass of the 20 kg object at the origin is simply denoted m. We note that $r_1 = \sqrt{1.25}$, $r_2 = \sqrt{2}$, and $r_3 = 0.5$ (again, with SI units understood). The force $\vec{F}_n$ that the n^{th} sphere exerts on m has magnitude $Gm_n m/r_n^2$ and is directed from the origin towards m_n, so that it is conveniently written as

$$\vec{F}_n = \frac{Gm_n m}{r_n^2}\left(\frac{x_n}{r_n}\,\hat{\mathrm{i}} + \frac{y_n}{r_n}\,\hat{\mathrm{j}}\right) = \frac{Gm_n m}{r_n^3}\left(x_n\hat{\mathrm{i}} + y_n\hat{\mathrm{j}}\right) .$$

Consequently, the vector addition to obtain the net force on m becomes

$$\begin{aligned}\vec{F}_{\text{net}} &= \sum_{n=1}^{3} \vec{F}_n \\ &= Gm\left(\left(\sum_{n=1}^{3} \frac{m_n x_n}{r_n^3}\right)\hat{\mathrm{i}} + \left(\sum_{n=1}^{3} \frac{m_n y_n}{r_n^3}\right)\hat{\mathrm{j}}\right) \\ &= -9.3\times 10^{-9}\,\hat{\mathrm{i}} - 3.2\times 10^{-7}\,\hat{\mathrm{j}}\end{aligned}$$

in SI units. Therefore, we find the net force magnitude is $|\vec{F}_{\text{net}}| = 3.2\times 10^{-7}$ N.