

We know that $m_1 + m_2 = 5.00 \text{ kg}$, or $m_2 = 5.00 \text{ kg} - m_1$.

$$F = \frac{Gm_1m_2}{r^2} \Rightarrow 1.00 \times 10^{-8} \text{ N} = \left(6.67 \times 10^{-11} \frac{\text{N} \cdot \text{m}^2}{\text{kg}^2} \right) \frac{m_1(5.00 \text{ kg} - m_1)}{(0.200 \text{ m})^2}$$

$$(5.00 \text{ kg})m_1 - m_1^2 = \frac{(1.00 \times 10^{-8} \text{ N})(0.200 \text{ m})^2}{6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2} = 6.00 \text{ kg}^2$$

Thus, $m_1^2 - (5.00 \text{ kg})m_1 + 6.00 \text{ kg}^2 = 0$

Finish the problem/////