3. MAGNETS (6 points) To explore the force between two small magnets, the following experiment is performed. One of the magnets is hanged from a thread with length $l = 1\,\mathrm{m}$. Other magnet is moved slowly closer while keeping the axes of the magnets always on the same horizontal line. At the moment when the distance between the magnets is $d_1 = 4\,\mathrm{cm}$ and the hanged magnet has moved $x_1 = 1\,\mathrm{cm}$ from initial position, balance is lost and the magnets pull together. By making the assumption that the pulling force between the magnets F_m depends on the distance d according to the relation $F_\mathrm{m} \propto d^{-n}$, find the value of the exponent n.