Consider 'test' masses, $m_A = m_B = m$, at A and B, separated by dr

$\vec{F}_A$ = grav. force on A due to Moon

$\vec{F}_B$ = grav. force on B due to Moon

$$\vec{F}_A \neq \vec{F}_B$$

We call the difference, $\vec{F}_A - \vec{F}_B$, the TIDAL FORCE due to the Moon, M

We can estimate its magnitude :-

$$dF = F_A - F_B$$

$$= \left(\frac{dF}{dr}\right) dr$$

If we evaluate $\frac{dF}{dr}$ at r (not strictly true, but OK for $R_p \ll r$)

$$dF \simeq \frac{d}{dr}\left(\frac{GM_M m}{r^2}\right) dr = -\frac{2GM_M m}{r^3} dr$$

Note: tidal force falls off with distance more rapidly than inverse-square law