2.

a) $F_G = F_{Grav}$

b) Die für die Kreisbahn notendige Zentralkraft wird von der Grafitationskraft gelievert

$F_Z = F_{Grav}$

$m * r * \omega^2 = G * m * M_E / r^2$

$\rightarrow r^3 * 4\pi/T^2 = G * M_E \Rightarrow M_E = \{ r^3 * 4\pi^2 \} / \{ T^2 * G \}$

$M_E = \{(384*10^6m)^3 * 4\pi^2\} / \{ (27,3 * 24* 3600s)^2 * 6,67\ 10^{-11}\ m^3/k*gs^2$
$M_E = 6,02*10^{24}Kg$

c) $\rho = M_E / V$

$\rho = \{3*5,97*10^{24}Kg\}/\{4*(6371*10^3m)^3*\pi\}$
$\rho = 5511,41223\ Kg/m^3$
$\rho = 5,5t/m^3$

3. $F_z = F_{grav}$

… $r_s = wurzel3\{G*m_E * T^2 / \{4*\pi^2\}$

$r_S = 42,2*10^6m$
$h=r_S - r_E = \underline{35,6 * 10^6m}$

4. $F_z = F_{grav}$

$M_{sonne} = \{r^3*4\pi^2\}$ over $\{ G*T^2)$

$M_S = 2,0 * 10^{30}Kg$