9

:

1. ,

, 23 56 .

23 59

,   .

2. ,   :

$$\frac{4f}{3}R_\oplus^3 = \frac{f}{3}d^2 r ,$$

d -   , r -   .

$$d = \sqrt{\frac{16R_\oplus^3}{3r}} .$$

,   "   ",   :   96   .

3.   .   (

!)   ,   .   ,   -

.   -   .   -   -

.

4. H_2O 6   ,

$6 \cdot 1.67 \cdot 10^{-24} \approx 10^{-23}$.   1   3 $\approx 10^{23}$.   ,

10^{22} ,

4   .

5. $\check{S}^2 R$ GM / R^2 ,

: $\check{S} = GM / R^3$.

,   .

$$P = 2f / \check{S} = 2f \sqrt{R^3 / (GM)}$$.

$$\dots = \frac{3}{4f} \cdot \frac{M}{R^3} = \frac{3f}{GP^2} \approx 6 \cdot 10^{13} \quad / \quad ^3$$

.

-   , $P = 1.5 \cdot 10^{-3} c$

.

.   : $2 \cdot 10^{14}$ / ^{3}

.

6.   ,   ,   (1 . .),   ,

(24   ):

$$\hat{} \approx \frac{1.5 \cdot 10^{11}}{86400} \approx 1.7 \cdot 10^6 \quad /$$

$$E = m_p \hat{}^2 / 2 \approx 2.4 \cdot 10^{-15}$$

.