

Заг 1

Co-рр - 08

$m_{\text{макс}_0} = +6 \text{ m} \rightarrow 04.02.1988$

$m_{\text{макс}_\text{текущ}} = 7,5 + 5 \lg d [\text{cm}] = 7,5 + 5 \lg 60 \approx 7,5 + 5 \cdot \lg (100^{\frac{1}{5}})^2 =$   
 $7,5 + 5 \cdot \lg 10^{\frac{4}{5}} = 7,5 + 4 = 11,5 \text{ m}$  при 21.04.1984

$L \sim a^{f(t)}$  - светимостта зависи от парамбв константа, повдигната на степен, което зависи <sup>линейно</sup> от времето

$L \sim \Delta m \sim \lg L \Rightarrow L \sim 10^{\Delta m} \Rightarrow \Delta m \sim t$

$\Delta m_1 = k \Delta t_1$

$\Delta m_2 = 5,5 \text{ m}$

$\Delta m_1 = m_{\text{макс}_\text{текущ}} - m_0$

$\Delta m_2 = k \Delta t_2$

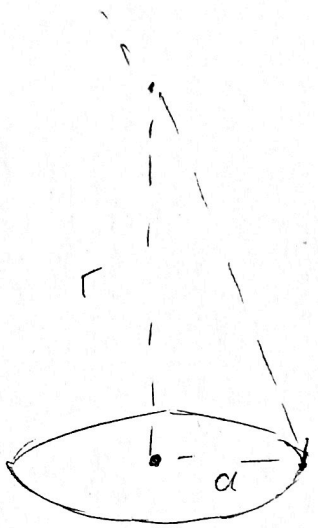
$\Delta t_2 = 440 \text{ d}$

$\Delta t_1 = 256 \text{ d}$

$m_0 = m_{\text{макс}_0} - t_1 \cdot \frac{\Delta m_2}{t_2} = 6 - 256 \cdot \frac{5,5}{440} = 2,8 \text{ m}$

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$$a_{[au]} = r_{[pc]} \cdot \delta ["]$$

$$206265'' \cdot \frac{v}{c} \cdot \sin \theta = \frac{\delta}{5}$$

$$v = \sqrt{\frac{GM}{a}} = \sqrt{\frac{2}{a_{[au]}}} \cdot 30 \text{ km/s}$$

$$\frac{v}{c} \cdot \sin \theta = \text{const.} \Rightarrow \theta = 90^\circ$$

$$206265'' \cdot \sqrt{\frac{2}{a_{[au]}}} \cdot \frac{30 \text{ km/s}}{c} = \frac{a_{[au]}}{5 r_{[pc]}}$$

$$20,5'' \cdot \sqrt{\frac{2}{a_{[au]}}} = \frac{a}{11}$$

$$20,5 \cdot 1,41 \cdot 11 = a \sqrt{a}$$

$$225,5 \cdot 1,41 = a \sqrt{a}$$

$$315,5 = a \sqrt{a}$$

$$a \approx 7,8^2$$

$$a \approx 46 \text{ au}$$

Loop-08

3.

$$T_{\text{MKC}} \approx 90 \text{ min} \quad a_{\text{MKC}} \approx 6780 \text{ km}$$

$$T_{\text{Zanma}} = 87 \text{ min} \quad \Delta V = V_{\text{Zanma}} - V_{\text{MKC}} = ?$$

$$\frac{(a_{\text{MKC}})^3}{(T_{\text{MKC}})^2} = \frac{(a_{\text{Zanma}})^3}{(T_{\text{Zanma}})^2}$$

$$V_{\text{Zanma}} = \frac{2\pi \cdot a_{\text{Zanma}}}{T_{\text{Zanma}}} = \frac{2\pi \cdot \frac{87}{89} \cdot a_{\text{MKC}}}{\frac{87}{90} \cdot T_{\text{MKC}}}$$

$$V_{\text{MKC}} = \frac{2\pi \cdot a_{\text{MKC}}}{T_{\text{MKC}}}$$

$$\left(\frac{a_{\text{MKC}}}{a_{\text{Zanma}}}\right)^3 = \left(\frac{T_{\text{MKC}}}{T_{\text{Zanma}}}\right)^2$$

$$\Delta V = \frac{90}{89} V_{\text{MKC}} - V_{\text{MKC}} = \frac{V_{\text{MKC}}}{89}$$

$$\left(\frac{6780}{a_{\text{Zanma}}}\right)^3 = \left(\frac{90}{87}\right)^2$$

$$V_{\text{MKC}} = \frac{2\pi \cdot 6780}{90 \cdot 60} \approx \frac{7000}{90} = \frac{700}{9} \approx 7,78 \text{ km/s}$$

$$\Delta V = \frac{7,78 \text{ km/s}}{89} = \frac{7780 \text{ m/s}}{89} \approx 87 \text{ m/s}$$

$$\left(1 + \frac{6780 - a_{\text{Zanma}}}{a_{\text{Zanma}}}\right)^3 = \left(1 + \frac{3}{87}\right)^2$$

$$1 + 3 \cdot \frac{6780 - a_{\text{Zanma}}}{a_{\text{Zanma}}} = 1 + 2 \cdot \frac{3}{87}$$

$$\frac{6780 - a_{\text{Zanma}}}{a_{\text{Zanma}}} = \frac{2}{87}$$

$$\frac{6780}{a_{\text{Zanma}}} = \frac{89}{87}$$

$$a_{\text{Zanma}} = \frac{87}{89} \cdot 6780 a_{\text{MKC}}$$

4.

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$$S_{M51} = 13' \cdot 121 \quad m_{M51} = +8^m \quad n_{M51} = 20$$

$$S_{NGC7000} = 120' \cdot 100' \quad m_{NGC7000} = +4^m \quad n_{NGC7000} = ?$$

$$\phi_{NGC7000} = 10^{0,48m} \cdot \phi_{M51}$$

$$n_{M51} \cdot \frac{\phi_{M51}}{S_{M51}} = n_{NGC7000} \cdot \frac{\phi_{NGC7000}}{S_{NGC7000}}$$

$$n_{NGC7000} = n_{M51} \cdot \frac{\phi_{M51}}{\phi_{NGC7000}} \cdot \frac{S_{NGC7000}}{S_{M51}} = 20 \cdot \frac{1}{10^{0,4 \cdot 4}} \cdot \frac{120 \cdot 100}{13 \cdot 12} = \frac{20}{40} \cdot \frac{1000}{13} =$$

$$= \frac{500}{13} \approx 38,5$$

$$n_{min} = 39$$