

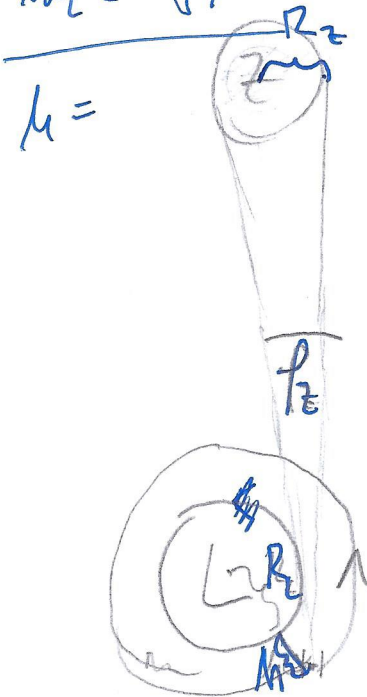
Zaporedje posnetkov Zemlje je naredila vesoljska sonda, ki se je gibala okoli Lune po krožni orbiti. Oцени višino sonde nad površjem Lune, če veš, da je med zaporednima posnetkoma minilo 8 sekund. Predpostavi, da je masa Lune 81-krat manjša od mase Zemlje, polmer Lune pa 4-krat manjši od Zemljinega.

Rešitve:

$A = 8 \text{ s}$

$R_L = \frac{R_Z}{4}$

$M_L = \frac{M_Z}{81}$



~~$h = 0,5$~~

$h_L \approx 0,5 \quad R_Z = 4R_L \rightarrow h_Z = 4h_L$

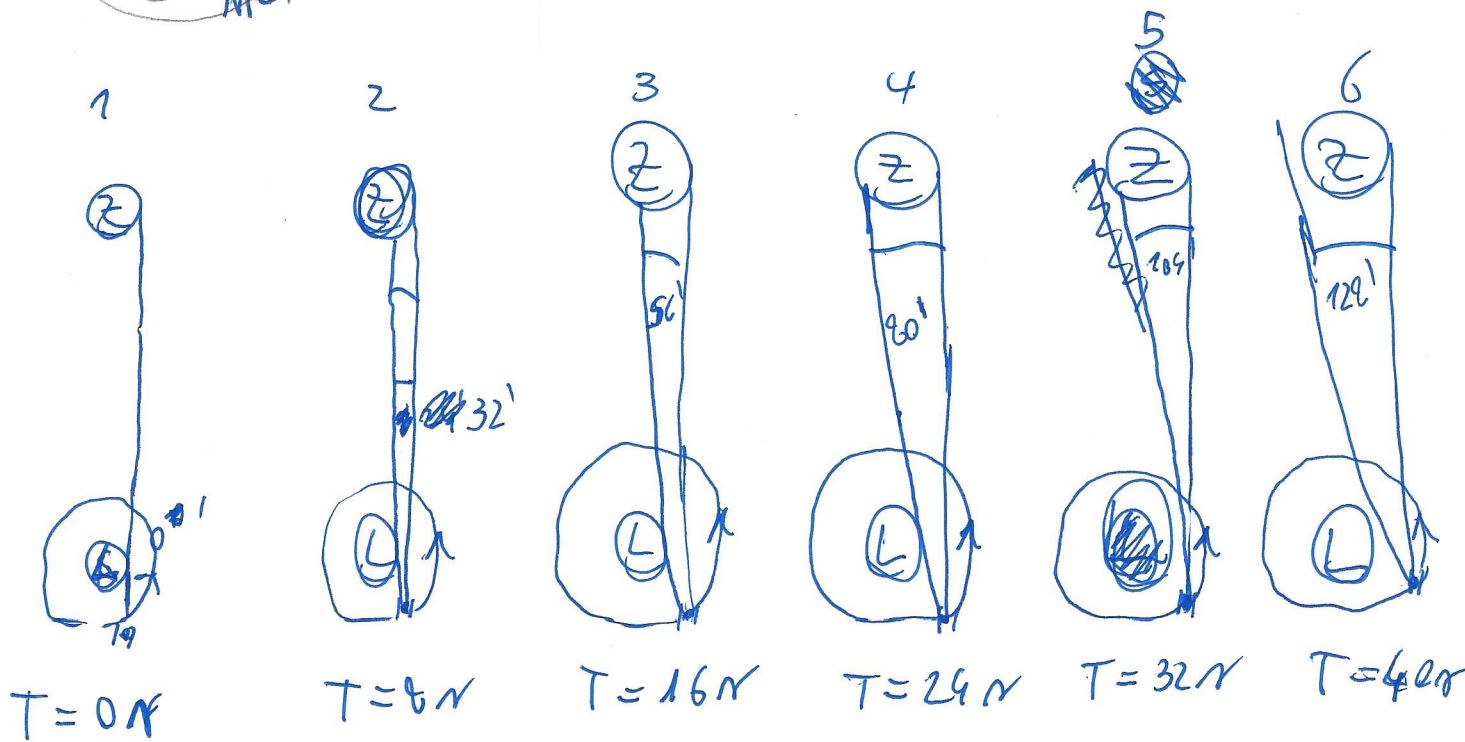
$h_Z = 4 \cdot 0,5^\circ$ ~~$h_Z \approx 2^\circ$~~ $h_Z \approx 2^\circ$

$\Delta \alpha = 24'$

$\omega_S = \frac{\Delta \alpha}{t}$

$\omega_S = \frac{24'}{8 \text{ s}}$

$\omega_S = 3 \text{ /s}$



2

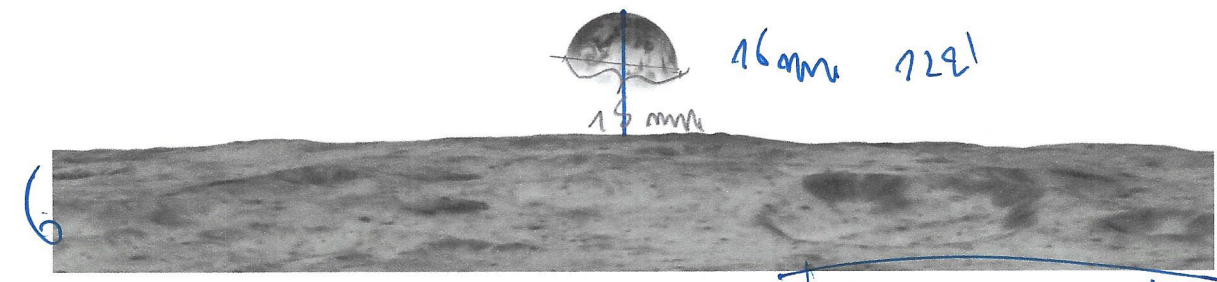
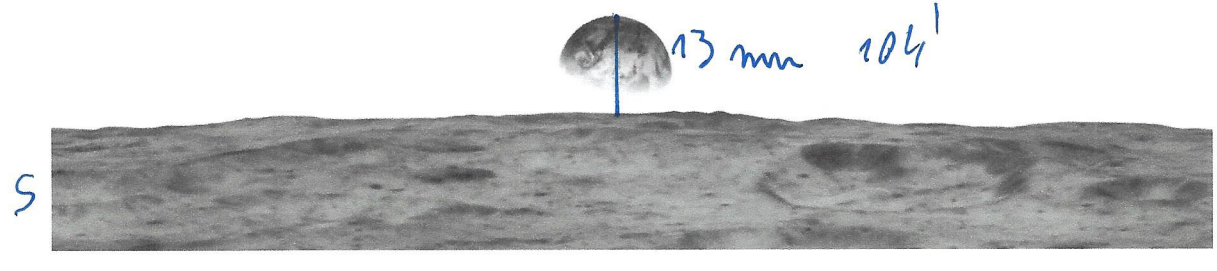
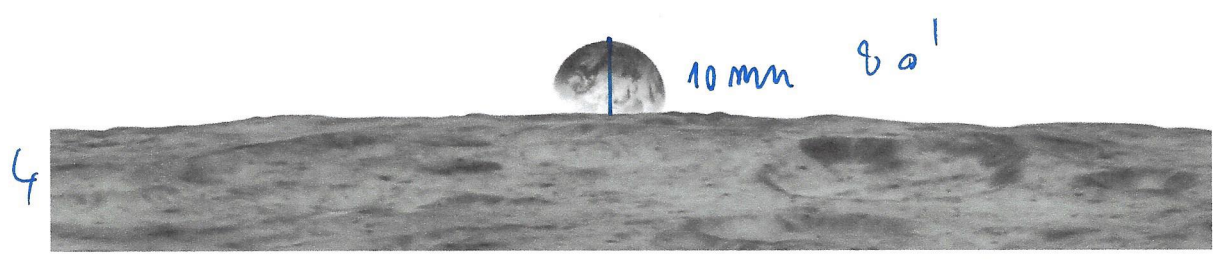
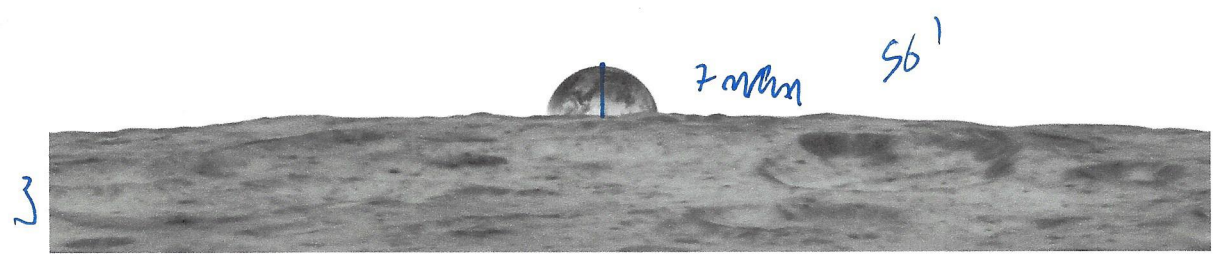
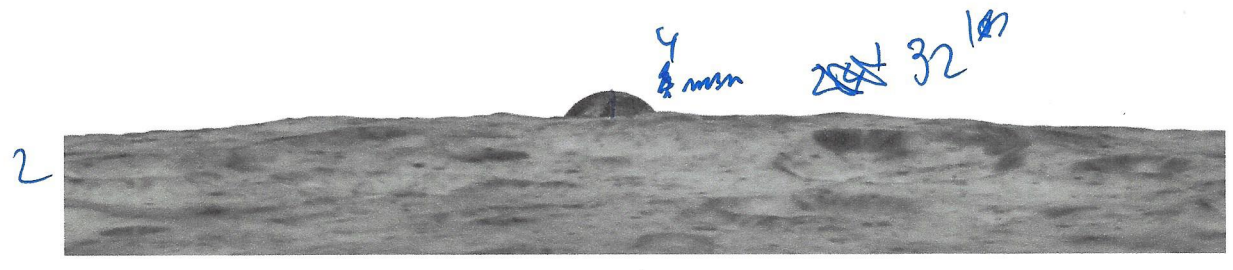
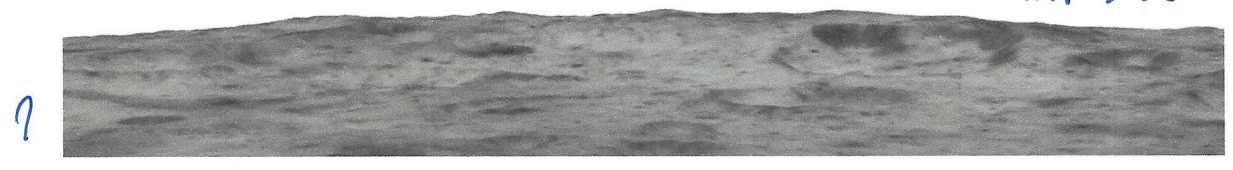
$\Delta\alpha = \alpha_3 - \alpha_2 = \alpha_4 - \alpha_3 = \alpha_5 - \alpha_4 = \alpha_6 - \alpha_5$

$\Delta\alpha = 56' - 32'$

$\Delta\alpha = 24'$

KER TEREN NI
RAVEN JE NAJBIZE
1mm ... 8'

↙ ≈ 0,5mm



$\varphi_z = 2^\circ$

$D_z = 15mm$

1mm ... 8'

$120' : 15 = 8$

23

$$7200:60 = 120$$

$$\begin{array}{r} 120 \\ 00 \end{array}$$

$$t_0 = \frac{360}{\omega_s}$$

$$\begin{array}{r} 6 \cdot 81 \\ \underline{486} \\ 14 \\ +18 \\ \hline 32 \end{array}$$

$$t_0 = \frac{360 \cdot 60 \cdot 20}{3}$$

$$\frac{104:81 = 64}{324}$$

$$t_0 = 7200 \alpha = 120 \text{ min} = 2 \text{ h}$$

$$3^3 = 27$$

$$4^3 = 64$$

$$5^3 = 125$$

$$\begin{array}{r} 72 \cdot 72 \\ \underline{504} \\ 144 \\ \hline 5184 \end{array}$$

$$4,5^3 = 91,125$$

$$4,5 \cdot 4,5$$

$$29,25 \cdot 4,5$$

$$\begin{array}{r} 100 \\ \underline{1225} \\ 2125 \end{array}$$

$$\begin{array}{r} 8100 \\ \underline{10125} \\ 91125 \end{array}$$

~~400~~
5

~~7200~~

$$\begin{array}{r} 6,67 \cdot 6 \\ \underline{4002} \\ 40 \end{array}$$

$$(R_L + M) = \frac{7200 \cdot 10^{-13}}{61}$$

$$(R_L + M)^3 = \frac{514 \cdot 10^4 \cdot 10^{-13} \cdot 64}{81}$$

$$(R_L + M)^3 = 64 \cdot 10^{17}$$

$$R_L + M = \sqrt[3]{64 \cdot 10^{17}}$$

~~$$R_L + M = 10 \sqrt[3]{64}$$~~

$$R_L + M = 4 \sqrt[3]{10^{17}}$$

$$R_L + M = 4 \cdot 10^5 \sqrt[3]{10^2}$$

$$R_L + M = 18,6 \cdot 10^5 \text{ m}$$

$$\begin{array}{r} 4 \cdot 4,65 \\ \hline 18,60 \end{array}$$

$$\frac{a_s^3}{t_0^2} = \frac{G \rho_2 m_L}{4\pi^2}$$

~~$(R_L + M)^3$~~
 ~~t_0^2~~

$$\frac{(R_L + M)^3}{t_0^2} = \frac{G \cdot \rho_2 m_L}{4 \cdot \pi^2 \cdot 81}$$

$\rho_2 \approx 40$

$$\frac{(R_L + M)^3}{7200^2} = \frac{6,67 \cdot 10^{-11} \cdot 6 \cdot 10^{24}}{40 \cdot 81}$$

$$\frac{(R_L + M)^3}{7200^2} = \frac{40 \cdot 10^{13}}{40 \cdot 81}$$

$$\begin{array}{r} 21,16 \cdot 4,6 \\ \underline{8464} \\ 11996 \end{array}$$

$$\begin{array}{r} 36 \cdot 4,6 \\ \underline{1864} \\ + 1276 \\ \hline 2116 \end{array}$$

$$4,6^3 = 97,336 \quad \sqrt[3]{100} \approx 4,65$$

$$R_c + h = 18,6 \cdot 10^5 \text{ m} \quad R_c \approx 1700000 \text{ m}$$

$$h = 18,6 \cdot 10^5 \text{ m} - R_c$$

$$h = 18,6 \cdot 10^5 - 17 \cdot 10^5 \text{ m}$$

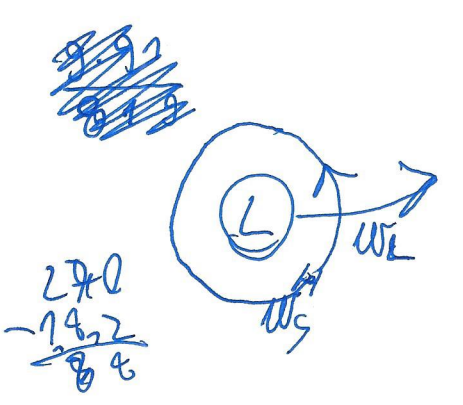
$$h = 1,6 \cdot 10^5 \text{ m}$$

$$h = 160000 \text{ m} = 160 \text{ km}$$

5] CE UPOŠTEVAMO DA SE LUNA PROMIKKA 27,3 · 24

(2)

$$t_L = 27,3 \text{ dan} = 655,2 \text{ h} + \frac{546}{70,92} = 655,2$$



$$w_L = \frac{360^\circ}{t_L}$$

$$w_L = \frac{360^\circ \cdot 60 \cdot 30}{655,2 \text{ h}}$$

6552 : 2 = 3276

819 : 3 = 273

273 : 3 = 91

91 · 30 = 2730

2730 : 30 = 91

91 · 60 = 5460

5460 : 60 = 91

91 · 7,2 = 655,2

300 : 91 = 3,2978

270
880
610
65

$$w_L = \frac{360 \cdot 30 \cdot 75 \cdot 180 \cdot 5 \cdot 60}{3276 \cdot 16 \cdot 38 \cdot 819 \cdot 273 \cdot 91}$$

$$w_L = \frac{300}{91} \approx 3,2978 \text{ 1/h}$$

5 · 91 = 455

~~$t_s = w_L \cdot t_0$~~

9549 · 40 = 381960

~~$f = 3,2978 \text{ 1/h} \cdot 2 \text{ h}$~~

~~$f = 6,5956$~~

7200 : 40 = 180

32000

3,2978 · 60 = 197,868

$t_s = 90 \text{ min}$

$f = w_L \cdot t_s$

$t_s = 90 \text{ min}$

$f = 0,549 \text{ 1/h} \cdot 40 \text{ min}$

$f = 21,96 \text{ 1/h}$

~~$0,0549 \cdot 60 = 3,294$~~

$f \ll 12\%$

f LAKNO ZANEMARIMO