M. 5104/7-8. Eötvös Lóránd összes levelei.
Feladó szerint, abc.

Ms 5104/7

Fővárosi —

Riserlek

Gruyot 1836 ben a Pantheonban 57 m. magas ingával
lengéstartamot mért a lengéskör $\frac{1}{16}$ részével
tért-e eltérő ívre?

Gruyot Le pendule n'est pas perpendiculaire à la surface des liquides tranquilles. C. R. XXXII
Fortschritte der Physik. VI Jahrg.

Nap vonzása a földközéppontban $a = \frac{R\omega^2}{\Delta}$ = 0,58949 kerek 0,59

Holdvonzás a földközéppontban = 0,0034181 kerek 0,0034

Egyik egység

Maximális Dugattyú $\frac{0,0000}{0,1000}$ 1,13426 Hold
0,000050504.

	$f_0 \frac{m}{D^2}$	$\frac{a}{D}$
Nap	0,58604	$\frac{1}{23599}$ = 0,0000423747
Hold	0,0033201	$\frac{1}{60,26951}$ = 0,0165931

2/

a 24 ik utáni dugattyú helyzete ennyi

$\int y\, dm\, g\alpha \qquad \alpha = \varepsilon - \beta$

$\int y\, dm\, g\beta$

$m_k l_k g(1+k) \sin \alpha_k - m_k l_k g(1+k)\eta_k$

$m_k l_k g \sin \alpha_k + m_k l_k g k \sin \alpha_k - m_k l_k g \cdot \eta_k$

$M l g \sin E (1+k) = \sum m_k l_k g (1+k) \eta_k$

~~$m l g \sin E$~~

$m l g \sin E + \sum m_k l_k g (k \sin \alpha_k - \eta_k)$

/3

$$f M\left(\frac{a}{D}\right)^3(2\cos^2\vartheta - \sin^2\vartheta) + C\cos\vartheta + f\frac{M}{D^2}\cos\vartheta$$

$$f\,3\,M\left(\frac{\varepsilon}{D}\right)^3 2\sin\vartheta\cos\vartheta + C\sin\vartheta + f\frac{M}{D^2}\sin\vartheta$$

(4)

$$C = f_0\frac{M}{D^2}$$

$$f\frac{M}{D^2} - C = f_0\frac{M}{D^2} - C + (f-f_0)\frac{M}{D^2}$$

$$f M\left(\frac{a}{D}\right)^3(2\cos^2\vartheta - \sin^2\vartheta) + (f-f_0)\frac{M}{D^2}\cos\vartheta \quad \text{helyett}$$

$$3 f M\left(\frac{a}{D}\right)^3 \sin\vartheta\cos\vartheta + (f-f_0)\frac{M}{D^2}\sin\vartheta$$

$$f_0 M\left(\frac{a}{D}\right)^3(2\cos^2\vartheta - \sin^2\vartheta) + (f-f_0)M\left(\frac{a}{D}\right)^3(2\cos^2\vartheta + \sin^2\vartheta) + (f-f_0)\frac{M}{D^2}\cos\vartheta.$$

$$f_0\,\frac{f-f_0}{f_0}\,\frac{\vartheta}{2\frac{a}{D}\frac{M}{D^2}} =$$

$$(f+K)\frac{M}{D^2}\cos\vartheta$$

$$(f-K)\frac{M}{D^2}\cos\vartheta$$

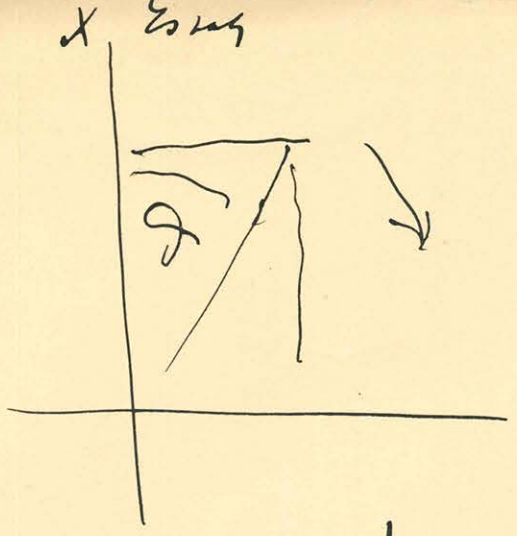
$$K\,1000 = \frac{1}{3000}\,3\left(f-f_0\frac{M}{D^2}\right)\sin\vartheta.$$

$$K\left(f_0\frac{M}{D^2}\right)\cos\vartheta\, ml$$

$$\frac{1}{r^3} - 3\frac{z^2}{r^5}$$

$$\frac{1}{r^3} - 3\frac{\sin^2\vartheta}{r^5}$$

$$\left\{\left(f\frac{M}{D^2}\cos\vartheta - C\cos\vartheta\right)m_a l_a - \left(f'\frac{M}{D^2}\cos\vartheta - C\cos\vartheta\right)m_g l_g\right\}\cos\alpha.$$



Kelet Z lefelé

λ geográfiai szélesség $n = \frac{2\pi}{86164} = 0{,}0000729$

$$m\frac{\partial^2 x}{\partial t^2} = X - 2mn\sin\lambda\frac{\partial y}{\partial t}$$

$$m\frac{\partial^2 y}{\partial t^2} = Y + 2mn\left(\sin\lambda\frac{\partial x}{\partial t} + \cos\lambda\frac{\partial z}{\partial t}\right)$$

$$m\frac{\partial^2 z}{\partial t^2} = Z - 2mn\cos\lambda\frac{\partial y}{\partial t}$$

$x = r\cos\varphi$ $y = r\sin\varphi$

$$\frac{\partial x}{\partial t} = -r\sin\varphi\frac{d\varphi}{dt} \qquad \frac{\partial y}{\partial t} = r\cos\varphi\frac{d\varphi}{dt}$$

$$\frac{\partial^2 x}{\partial t^2} = -r\cos\varphi\left(\frac{d\varphi}{dt}\right)^2 - r\sin\frac{\partial^2\varphi}{\partial t^2} \quad -\sin\varphi$$

$$\frac{\partial^2 y}{\partial t^2} = -r\sin\varphi\left(\frac{d\varphi}{dt}\right)^2 + r\cos\frac{\partial^2\varphi}{\partial t^2} \quad +\cos\varphi$$

$$mr\frac{\partial^2\varphi}{\partial t^2} = Y\cos\varphi - X\sin\varphi + 2mn\cos\varphi\cos\lambda\frac{\partial z}{\partial t}\ \text{ir.}$$

$$+2mn\sin\lambda\, r\sin\varphi\cos\varphi\frac{d\varphi}{dt}$$

$$-2mn\sin\lambda\, r\sin\varphi\cos\varphi\frac{d\varphi}{dt}.$$

$$m\frac{\partial^2 z}{\partial t^2} = Z - 2mnr\cos\varphi\cos\lambda\frac{d\varphi}{dt}$$

$$e^{-\frac{\pi t i}{\tau}} \frac{i}{k\left(D+\frac{\pi i}{\tau}\right)^2+\varepsilon\left(D+\frac{\pi i}{\tau}\right)+Mgs} /$$

$$\frac{/}{-k\frac{\pi^2}{\tau^2}+\frac{\varepsilon\pi i}{\tau}+Mgs}\left(\cos\frac{\pi t}{\tau}+i\sin\frac{\pi t}{\tau}\right)t$$

$$\frac{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)-\varepsilon\frac{\pi i}{\tau}}{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)^2+\frac{\varepsilon^2\pi^2}{\tau^2}}\left(\cos\frac{\pi t}{\tau}+i\sin\frac{\pi t}{\tau}\right)$$

$$\frac{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\cos\frac{\pi t}{\tau}+\varepsilon\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}}{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)^2+\frac{\varepsilon^2\pi^2}{\tau^2}}t$$

$$-2k\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}-2k\varepsilon\frac{\pi^2}{\tau^2}\cos\frac{\pi t}{\tau}-k\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\frac{\pi^2}{\tau^2}\cos\frac{\pi t}{\tau}\cdot t+\cdots$$

$$+\varepsilon\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\cos\frac{\pi t}{\tau}+\varepsilon^2\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}-\varepsilon t\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}+\cdots$$

$$+Mgs\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\cos\frac{\pi t}{\tau}\cdot t+\varepsilon t\cdot\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}=\left[\left(Mgs-k\frac{\pi^2}{\tau^2}\right)^2+\cdots\right]$$

$$\cdot 1-k\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\cos\frac{\pi t}{\tau}\cdot\frac{\pi^2}{\tau^2}\oplus-k\varepsilon\frac{\pi^3}{\tau^3}\sin\frac{\pi t}{\tau}+\varepsilon\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}+\varepsilon^2\frac{\pi^2}{\tau^2}\cos\frac{\pi t}{\tau}$$

$$+Mgs\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\cos\frac{\pi t}{\tau}+\varepsilon\frac{\pi}{\tau}\sin\frac{\pi t}{\tau}+\frac{1}{\cdots}\cos\frac{\pi t}{\tau}$$

$$-k\frac{\pi^2}{\tau^2}\left(Mgs-k\frac{\pi^2}{\tau^2}\right)+\varepsilon^2\frac{\pi^2}{\tau^2}\cos\frac{\pi t}{\tau}+Mgs\cdot\left(Mgs-k\frac{\pi^2}{\tau^2}\right)$$

$$\left[\left(Mgs-k\frac{\pi^2}{\tau^2}\right)\left(Mgs-k\frac{\pi^2}{\tau^2}\right)+\varepsilon^2\frac{\pi^2}{\tau^2}\right]\cos\frac{\pi t}{\tau}-$$

$$\varphi=e^{-\alpha t}\left(A\cos\frac{\pi t}{\tau}+B\sin\frac{\pi t}{\tau}\right)-\frac{a\pi\left(Mgs-k\frac{\pi^2}{\tau^2}\right)}{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)^2+\frac{\varepsilon^2\pi^2}{\tau^2}}\cos\frac{\pi t}{\tau}+\frac{\frac{a\pi}{\tau}\varepsilon\frac{\pi}{\tau}}{\left(Mgs-k\frac{\pi^2}{\tau^2}\right)^2+\frac{\varepsilon^2\pi^2}{\tau^2}}\sin\frac{\pi t}{\tau}$$

$$\varphi=e^{-\alpha t}\left(A\cos\frac{\pi t}{\tau}+B\sin\frac{\pi t}{\tau}\right)-\varphi\frac{a}{2}\sin\frac{\pi t}{\tau}$$

$$\varphi=Ae^{-\alpha t}\sin\frac{\pi t}{\tau}-\cdots\frac{a}{2ka}\sin\frac{\pi t}{\tau}$$

$$\varphi=Ae^{-\alpha t}\sin\frac{\pi t}{\tau}+\frac{a\tau}{2k\log d}\cdot\sin\frac{\pi t}{\tau}$$

$$m\frac{d^2x}{dt^2} = -mc\frac{dy}{dt} \qquad \zeta = 2n\sin\lambda$$

$$m\frac{d^2y}{dt^2} = +mc\frac{dx}{dt} -$$

$$\frac{d^2x}{dt^2} = -2n\sin\lambda\frac{dy}{dt}$$

$$\frac{d^2y}{dt^2} = +2n\left(\sin\lambda\frac{dx}{dt} - \cos\lambda\frac{dz}{dt}\right)$$

$$\frac{d^2z}{dt^2} = -g + 2n\cos\lambda\frac{dy}{dt}$$

$$\frac{d^2x'}{dt^2} = -2n\sin\lambda\cos\gamma\frac{dy}{dt} - 2n\sin\gamma\left(\sin\lambda\frac{dx}{dt} - \cos\lambda\frac{dz}{dt}\right)$$

$$\frac{d^2y'}{dt^2} = -2n\sin\lambda\sin\gamma\frac{dy}{dt} + 2n\cos\gamma\left(\sin\lambda\frac{dx}{dt} - \cos\lambda\frac{dz}{dt}\right)$$

$$\frac{dy}{dt} = \frac{dy'}{dt}\cos\gamma - \frac{dx'}{dt}\sin\gamma$$

$$\frac{dx}{dt} = \frac{dy'}{dt}\sin\gamma + \frac{dx'}{dt}\cos\gamma$$

$$\frac{d^2x'}{dt^2} = -2n\sin\lambda\cos\gamma\left(\cos\gamma\frac{dy'}{dt} - \sin\gamma\frac{dx'}{dt}\right) - 2n\sin\lambda\sin\gamma\left(\sin\gamma\frac{dy'}{dt} + \cos\gamma\frac{dx'}{dt}\right) + 2n\sin\gamma\cos\lambda\frac{dz'}{dt}$$

$$\frac{d^2x'}{dt^2} = -2n\sin\lambda\frac{dy'}{dt} + 2n\sin\gamma\cos\lambda\frac{dz'}{dt}$$

$$\frac{d^2y'}{dt^2} = -2n\sin\lambda\sin\gamma\left(\cos\gamma\frac{dy'}{dt} - \sin\gamma\frac{dx'}{dt}\right) + 2n\sin\lambda\cos\gamma\left(\sin\gamma\frac{dy'}{dt} + \cos\gamma\frac{dx'}{dt}\right) - 2n\cos\gamma\cos\lambda\frac{dz'}{dt}$$

$$\frac{d^2y'}{dt^2} = +2n\sin\lambda\frac{dx'}{dt} - 2n\cos\gamma\cos\lambda\frac{dz'}{dt}$$

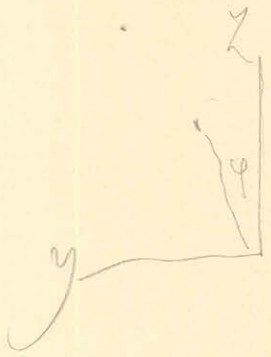
$$\frac{d^2z'}{dt^2} = -g + \cos\lambda\,2n\left(\cos\gamma\frac{dy'}{dt} - \frac{dx'}{dt}\sin\gamma\right)$$

$$m\frac{d^2y}{dt^2} = -2mn\cos\alpha$$

$$2mn\cos\alpha = c$$

$$m\frac{d^2y}{dt^2} = -c\frac{dx}{dt}$$

$$m\frac{d^2z}{dt^2} = -mg + c\frac{dy}{dt}$$



~~mgf~~

$$z = r\cos\alpha$$

$$y = r\sin\alpha$$

$$\frac{dz}{dt} = -r\sin\alpha\frac{d\alpha}{dt}$$

$$\frac{dy}{dt} = +r\cos\frac{d\alpha}{dt}$$

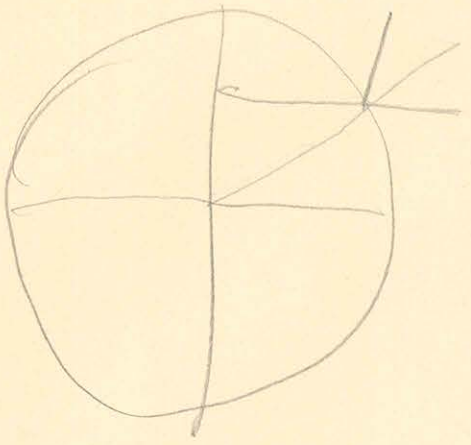
$$\frac{d^2z}{dt^2} = -r\cos\alpha\left(\frac{d\alpha}{dt}\right)^2 - r\sin\alpha\frac{d^2\alpha}{dt^2}$$

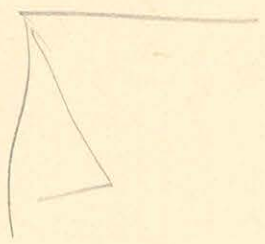
$$\frac{d^2y}{dt^2} = -r\sin\alpha\left(\frac{d\alpha}{dt}\right)^2 + r\cos\alpha\frac{d^2\alpha}{dt^2}$$

$$\frac{d^2y}{dt^2}\cos\alpha - \frac{d^2z}{dt^2}\sin\alpha = r\frac{d^2\alpha}{dt^2}$$

$$mr\frac{d^2\alpha}{dt^2} = -c\cos\alpha\frac{dz}{dt} + mg\sin\alpha - c\sin\alpha\frac{dy}{dt}$$

$$mr^2\frac{d^2\alpha}{dt^2} = mgr\sin\alpha + cmr^2\cos\alpha\sin\alpha\frac{d\alpha}{dt} - cmr^2\sin\alpha\cos\alpha\frac{d\alpha}{dt}$$





$$x_1 = r\cos\alpha$$

$$y_1 = r\sin\varphi$$

$$\frac{dx}{dt} = \cancel{\frac{dx}{d\alpha}}\cos\alpha - r\sin\alpha\frac{d\alpha}{dt}$$

$$\frac{dy}{dt} = r\sin\alpha\frac{d\varphi}{dt}$$

$$\frac{d^2x}{dt^2} = -r\cos\alpha\left(\frac{d\alpha}{dt}\right)^2 - r\sin\alpha\left(\frac{d\alpha}{dt}\right)^2$$

$$\frac{d^2y}{dt^2} = -r\sin\alpha\left(\frac{d\alpha}{dt}\right)^2 + r\cos\alpha\left(\frac{d^2\alpha}{dt^2}\right).$$

$$\frac{d^2z}{dt^2}\cos\alpha - \frac{d^2x}{dt^2}\sin\alpha = \frac{d^2\alpha}{dt^2}.$$

$$m\frac{d^2y}{dt^2} = -2mn\cos\alpha\frac{dz}{dt}$$

$$m\frac{d^2z}{dt^2} = -mg + 2mn\cos\alpha\frac{dy}{dt}.$$

$$z = r\cos\alpha$$

$$y = r\sin\alpha$$

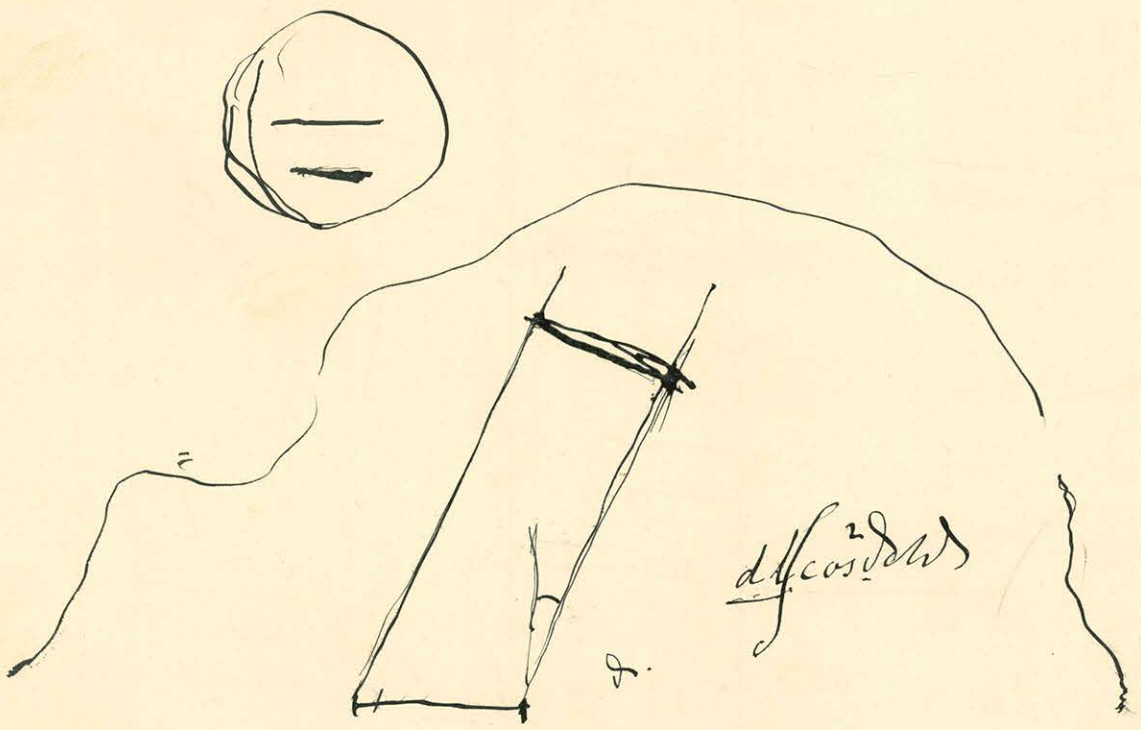
$$\frac{dz}{dt} = -r\sin\alpha\frac{dx}{dt}$$

$$\frac{dy}{dt} = r\cos\alpha\frac{dx}{dt}$$

$$\frac{d^2z}{dt^2} = -r\cos\alpha\frac{d^2\alpha}{dt^2}$$

$$\frac{d^2y}{dt^2} = -r\sin\alpha\frac{d^2\alpha}{dt^2}$$

4 h. —	87 m —	454,0
5 h.	5 m 30	337,0
"	23 m "	360,4
— "	34 m kräftiges	353,4
"	56 m	403,8



8h. 42. 105,2
46 104,7
57 99,6
9h. 07 m 99,0
09 992 megindítva
13 99,0
34 88,0
54 110,4
16h. 2m hiúz 108 hiúz
15m 114

Párisból 5°

1 6,54
bob 396,6 : 60 = 6,6
330 : 60 = 5,5
270 : 60 = 4,5
396 | 2760 | 6,8

18,6 : 27,6 = 0,67
1656
2040

Párisból 1°

11h. 1m. 238,8 x
" (9m 182,0 71,6 elhagyták
13m. 167,2
24½ 227,8) 60,6 . 0,654 Szerény
36 188,2) 27,6 — 204,1
47½ 215,8) 18,6 205,2
58m 197,2

a Rhodus.

12h. 1m hiúz. Ezeket csak megindítva, akkor pedig 203 súlyt vettek.

súlyos a Cygnus

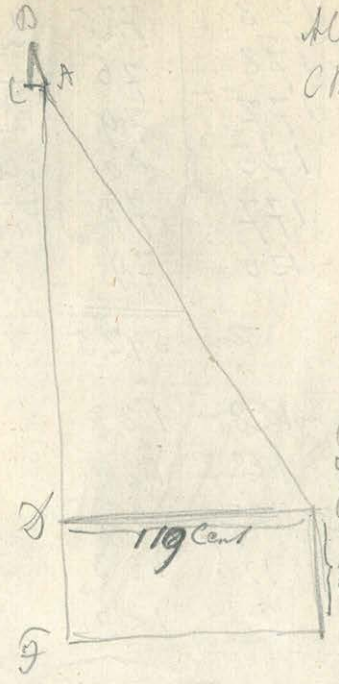
12h. 6m 208,8
" 40m 172,5
1h. 2m 190,6
1h. 13m 189,3 nem fordult
megvannak legyőzve a hattyúk
1h. 19m 108,2) 116,5
22½m 224,7 .
1h. 48m 172,2) 52,5
beszüntetem a súlyjelzést
megvannak újra legyőzve a hattyúk.
1h. 55m 20s 134,7
2h. 12m 30s 235,6
28m 30 205,2
d. u. 4h. 15m 228,0 Párisból 353°
26m 228,2

22 nehéz pillét lassan fogom 6°-al előre vonni. } elkészítem 192 előtt
elkészítem 1 óra = 33,6 m.

Laplace	2,55
Poisson	2,554
Meyer	2,62 – 2,64
Bede	2,66
Danger	2,59
Desains	2,62 – 2,65
Kunckel	2,861 – 2,941

34°-20°	20°-12°	12°-2°30'
2,405	2,634	2,266
2,259	2,237	2,216
2,382	2,562	2,126
2,321	2,427*	*2,205
2,321	2,488	2,265
2,354	2,348	2,309
2,354	2,381	2,420
2,365	2,445	2,337
Összeg 18,761	19,541	18,174
Közép 2,345	2,443	2,272

Jan. 8.



$AC = 1$ Cent.

$CD = 4$ Cent.

$BC = 119{,}2$

$EG = 387$

$CD = 331{,}5$

tg $\psi = 22°$

$\varphi = 34°$

$\sqrt{1 - \cos\varphi} = 0{,}4135$

8/I d.e 11h 00 f. felület.

48° 57'

φ = 20° 31'

√1−sinφ = 0,2518

		Diff.
255	176	79
255,5	178	77,5
254	178	76
256	177	79
256	176	80
254	177	77
255	176	79
	Σ	547,5

φ 34° φ' 20° 31'

a = 2,4051

Diff.

~~a = 2,2087~~

a = 2,2528

Közép | m.m.

78,214 | 0,3910

8/I d.u. 3h. az előbbi felület

65° 52'

φ = 12° 4'

√1−sinφ = 0,1490

		Diff.
253	128	125
252	128	124
252,5	127	125,5
252	129	123
253	127,5	126,5
	Σ	624

0,2300

a = 2,2373

Közép | m.m

124,2 | 0,621

		Diff.
254,5	76	178,5
255	72	182
254	76	178
253	71	177
254	75	179
	Σ	894,5

85° 19'

φ = 2° 20'

√1−sinφ = 0,0283

0,2735

a = 2,2659

Közép | m.m.

~~177,66~~ 178,9 | 0,894

8/I

φ = 2° 20'

√1−sinφ = 0,0283

Diff.

Öpner a = 2,37104

Közép | m.m.

0,8945

8/I 2h. 30p

65° 53'

φ = 12° 4'

√1−sinφ = 0,1490

		Diff.
252,5	126	126,5
252,5	127,5	125,0
249	127	122
253	125,5	127,5
253	127	126
	Σ	627,0

0,2675

a = 2,2162

Közép | m.m

125,4 | 0,627

		Diff.
253,5	178	75,5
248	176	72
250,5	174	76,5
252	175	77
251	174	77
	Σ	378

49° 25

φ = 20° 4'

√1−sinφ = 0,2462

24° φ 2,2594

0,249

a = 2,5617

Közép | m.m.

75,6 | 0,378

4h. d.e. 8/I

finsen megfordulva

49° 25'

φ = 20° 4'

√1−cosφ = 0,2462

		Diff.	
~~500~~			
257	178	79	
257	177	80	
256	176	80	
257	177	80	
255	177,5	78,5	
		397,5	79,7	0,3985

Közép m.m.

54° φ
a = 2,3819

Ofner
a = 2,3052

257	127	130	
256	127	129	
253	127	126	
253	127	126	
253,5	126	127,5	
		638,5	127,7	0,6385

Közép m.m.

0,24
2,6049

65° 25'

φ = 12° 17'

√1−cosφ = 0,1513

253	70,5	179,5	
250	70	177	
250	72	178	
252	75	177	
252	74	178	
		889,5	177,9	0,8895

Közép m.m.

0,251
a = 2,126

84° 41'

φ = 2° 39'

√1−cosφ = 0,0332

8/I

Diff.

Ofner
a = 2,3525

φ = 2° 39'

√1−cosφ = 0,0332

Közép m.m.
0,8895

251	110	141	
251	112	139	
250	110	140	
253	111	142	
251	111	140	
		702	140,4	0,702

Közép m.m.

0,1875
a = 2,235

71° 58'

70° 58'

φ = 9° 31'

√1−cosφ = 0,1171

250	174	76	
249	174	75	
250	174,5	75,5	
251	173,5	76,5	
250	174	76	
		379,0	75,8	0,3

Közép m.m.

54° φ
a = 2,321

0,323
a = 2,427

49° 14'

φ = 20° 23'

√1−cosφ = 0,2502

5h.15p. 9/I

Diff

04° φ
a = 2,311

Öpner
a = 2,3502

φ = 20° 23'

√1−cosφ = 0,2502

Közép m.m.
0,379

63° 30'	251,5	132	119,5		
	253	131	122		
φ = 13° 15'	251	132	119	0,2155	
	252	135,5	116,5	a = 2,488	
√1−cosφ = 0,1634	253	135,5	117,5		
				Közép	m.m.
			594,5	118,9	0,5945
85° 25'	253,5	74	179,5		
	253	75	178		
~~φ = 20° 18'~~	253	71	182	0,306	
	253,5	73	180,5	a = 2,265	
φ = 2° 18'	253	72,5	180,5		
√1−cosφ = 0,0283				Közép	m.m.
			900,5	180,1	0,9005

5h.45p. 8/I

Diff

Öpner
a = 2,3263

~~φ = 20° 18'~~

φ = 2° 18'

√1−cosφ = 0,0283

Közép m.m.
0,9005

	253,5	130,5	123,0		
	252	133	119		
65°	254	130,5	123,5	0,2900	
	253	130	123	a = 2,309	
φ = 12° 30'	253	131	122		
√1−cosφ = 0,1539				Közép	m.m.
			610,5	122,1	0,6105
48° 36'	255	179	176	04° φ	
	253	179,5	173,5	a = 2,354	
	253,5	178	175,5		
φ = 20° 42'	254	178	176	0,2355	
	252	178	174	a = 2,348	
√1−cosφ = 0,2542				Közép	m.m.
			875,0	175	~~0,875~~ 0,375

6h. 10p. 8/I

Diff.

$\varphi = 20° 42'$

$\sqrt{1-m\varphi} = 0{,}2542$

φ° a =

Összes

$a = 2{,}3975$

Közép m. m.

0,375

$65° 4'$	256	133,5	122,5		
	256	132	124		
	254	134	120	0,2395	
$\varphi = 12° 28'$	256	131	125	$a = 2{,}381$	
	257	134	123	Közép m. m.	
$\sqrt{1-m\varphi} = 0{,}1536$			614,5	122,9	0,6145
	256	74	182		
	256,5	76	180,5		
$84° 21'$	256	76	180	0,2870	
	257	76	181	$a = 2{,}420$	
$\varphi = 2° 50'$	255	77	178		
				Közép m. m.	
$\sqrt{1-m\varphi} = 0{,}0346$			901,5	180,3	0,9015

6h. 05p. 8/I

Diff.

$\varphi = 2° 50'$

$\sqrt{1-m\varphi} = 0{,}0346$

Összes

$a = 2{,}3885$

Közép m. m.

0,9015

	255,5	132	123,5		
	256	131,5	124,5		
$64° 40'$	256	133	123	0,2835	
	256	133	123	$a = 2{,}397$	
$\varphi = 12° 40'$	257	133	124	Közép m. m.	
$\sqrt{1-m\varphi} = 0{,}1559$			618,0	123,6	0,618
	254	186	68	φ°	
	253	184	69	$a = 2{,}365$	
	254	183	71		
$46° 44$	255	185	70	0,268	
	257	185	72	$a = 2{,}445$	
$\varphi = 21° 38'$				Közép m. m.	
$\sqrt{1-m\varphi} = 0{,}2655$			350	70	0,35

9/I 11h.45p. Jris felület

46°45'

φ = 21°37'

√1−cosφ = 0,2653

		Diff.	
233	162	71	φ − 24°
232	162	70	a = 2,3785
232,5	162	70,5	
232,5	162	70,5	Ofner
233	162,5	70,5	a = 2,4287
			Közép m.m.
		352,5	70,5 0,3525

64°37'

φ = 12°42'

√1−cosφ = 0,1562

232	109	123	
232	109	123	
232,5	108,5	124	0,2655
233	109	124	a = 2,4335
233	109	124	
			Közép m.m.
		618	123,6 0,6180

84°19'

φ = 2°50'

√1−cosφ = 0,0346

~~230~~	~~49~~		
235	51	184	
234,5	52,5	182	
233,5	51	182,5	0,2948
235	51,5	183,5	a = 2,4243
234	52	182	
235	52,5	182,5	
187,5			Közép m.m.
233,5	52	1278,0	182,57 0,9128

9/I d.u. 34.30' m. előtti felület

84°19'

φ = 2°50'

√1−cosφ = 0,0346

		Diff.	
235	58	177	Ofner
235	58	177	a = 2,3499
234	57,5	176,5	
234	57,5	176,5	
235	58,5	176,5	
			Közép m.m.
		883,5	176,7 0,8835

65°

φ = 12°30'

√1−cosφ = 0,1539

234	113	121	
~~231~~	~~113~~		
233	113	120	0,2855
232,5	113	119,5	a = 2,3931
~~233~~	~~107~~		
226	106,5	119,5	
225	107	118	
			Közép m.m.
		598	119,6 0,5980

46°54'

φ = 21°33'

√1−cosφ = 0,2644

227	159	68	
225,5	157	68,5	
225	157	68	
227	158	69	0,2545
227	157	70	a = 2,3031
			Közép m.m.
		343,5	68,7 0,3435

5h.

$\varphi = 21^\circ 33'$

$\sqrt{1-\cos\varphi} = 0{,}2644$

		Diff.	$34^\circ - \varphi$
			$a = 2{,}3038$
			Öpner
			$a = 2{,}2818$
			Közép m. m.
			68,7 | 0,3435

65°

$\varphi = 12^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}1539$

223	103	120	
~~225~~	~~107~~		
223	103	120	0,2525
222	102	120	$a = 2{,}2851$
221	103	118	
221	103	118	
			Közép m. m.
		596	119,2 | 0,5960

6h.

$84^\circ 20'$

$\varphi = 2^\circ 50'$

$\sqrt{1-\cos\varphi} = 0{,}0346$

221	44		
219	45		
225	46		
221	50,5		0,2730
221,5	48	173,5	~~0,2718~~
221,5	48	173,5	$a = 2{,}2883$
221	47	174	
~~222~~	~~54~~	174	
222	48	174	Közép m. m.
221	47	869	173,8 | 0,8690

6h. 10 m.

Fríziumegyenlítés feltöltés

$84^\circ 20'$

$\varphi = 2^\circ 50'$

$\sqrt{1-\cos\varphi} = 0{,}0346$

		Diff.	
~~282~~	96	186	Öpner
280	95,5	184,5	$a = 2{,}4782$
281,5	98	183,5	
281	97,5	183,5	
282,5	99,5	183,0	
281,5	98	183,5	Közép m. m.
		918,0	183,6 | 0,9180

65°

$\varphi = 12^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}1539$

280,5	159	121,5	
281	159	122	
281	159	122	0,3075
282	160	122	$a = 2{,}5691$
281	158	123	
			Közép m. m.
		610,5	122,1 | 0,6105

47°

$\varphi = 21^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}2638$

275	205	70	
276	207	69	
277	206,5	70,5	
277	207,5	69,5	0,2605
277	207	70	$a = 2{,}3703$
			Közép m. m.
		349,0	69,8 | 0,3490

$\varphi = 21^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}2638$

Diff

$34^\circ - \varphi$

$a = 2{,}3313$

Öpenen

$a = 2{,}3435$

			Közép	m.m.
			69,8	0,3490

65°

$\varphi = 12^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}1539$

276,5	156,5	120,0		
276,5	156	120,5		
276	157	119	0,2480	
275	157	118	$a = 2{,}2657$	
276	156,5	119,5		
			Közép	m.m.
		597,0	119,4	0,5970

~~$84^\circ 20'$~~

$84^\circ 40'$

$\varphi = 2^\circ 40'$

$\sqrt{1-\cos\varphi} = 0{,}03316$

~~280~~	~~114,5~~			
281	103	178		
280	103	177		
280	103	177	0,2925	
280	101	179	$a = 2{,}4233$	
281,5	103	178,5		
~~280~~	~~101,5~~			
280	104		Közép	m.m.
		889,5	177,9	0,8895

$\varphi = 2^\circ 40'$

$\sqrt{1-\cos\varphi} = 0{,}03316$

Diff

Öpen

$a = 2{,}3490$

			Közép	m.m.
			177,9	0,8895

65°

$\varphi = 12^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}1539$

282	161	121		
281,5	162,5	119		
281	162,5	118,5	0,2920	
282	162,5	119,5	$a = 2{,}4192$	
281,5	162	119,5		
			Közép	m.m.
		597,5	119,5	0,5975

47°

$\varphi = 21^\circ 30'$

$\sqrt{1-\cos\varphi} = 0{,}2638$

$\varphi - 34^\circ$

$a = 2{,}2612$

280	211,5	68,5		
279	211,5	67,5		
279	211	68	0,2590	
279	211	68	$a = 2{,}3567$	
279	212,5	66,5		
			Közép	m.m.
		338,5	67,7	0,3385

bevég. ennie 9/I 8h. este

Új szorzat.

tárcsú megfordítással.

	φ		
Scala 7½	26°47	76	a = 2,184
17½	42°2'	35,5	a = 2,271
27½	52°45'	5	
37½	59°40'	87	a = 2,228
57½	68°27	62	
77½	73°53'	47	
97½	76°31'	40	2,572
147½	80°56'	26	
207½	83°28'	16,5	

7½

27°

$\varphi = 31°30'$

$\sqrt{1-\cos\varphi} = 0,3839$

175

$z_1 - z_2 = 0,265$

a = 2,206

21½

22

47°

$\varphi = 21°30'$

$\sqrt{1-\cos\varphi} = 0,2638$

$z_2 - z_1 = 0,215$ a = 2,349

41½

79

62°

$\varphi = 14°$

$\sqrt{1-\cos\varphi} = 0,1723$

$z_3 - z_1 = 0,31$ a = 2,343

210

83°30'

$\varphi = 3°15'$

$\sqrt{1-\cos\varphi} = 0,0400$

17

$7\frac{1}{2}$ 29/I 876

27°

19°C.

267
257
266,5
258,5
1049

Közép 262,54

$21\frac{1}{2}$

47°

19°C.

~~210~~ 203
~~103,5~~ 207
202
~~102~~
~~102,5~~ 205
208

Közép 205

0,2877 mm.
a = 2,396

45

65°

19°C.

152
146
152
147
597

Közép 149,25

0,2787 mm.
a = 2,536

210

85° 30'

19°C.

99
93
100
94
386

Közép 96,5

0,2637
a = 2,316

Ömes $\varphi_1 = 31°30'$
$\varphi_2 = 3°15$
$z_2 - z_1 = 0,8301$
a = 2,414

$\varphi = 85°30'$
$\varphi = 3°15'$

19°C

Közép 96,5

0,2606
a = 2,288

45

65°

19°C

151,5
145,5
151,5
146
594,5

Közép 148,625

$21\frac{1}{2}$

47°

19°C

201
205,5
204
205
811,5

Közép 202,875

~~0,2631~~
0,2712
a = 2,467

$7\frac{1}{2}$

27°

19°C

260
256
260
257
1039

Közép 259,75

0,2844
a = 2,368

Ömes $z_2 - z_1 = 0,8162$
a = 2,376

27°

19°C

259,75

0,2975

a = 2,477

21½

197

204

47°

197

200,25

19°C

205

801

0,2612

a = 2,376

45

150,5

65°

145,5

148

150

19°C

146

592

7 10

102

0,2544

a = 2,233

90

83° 00'

100,5

97,125

90

19°C.

988,5

$z_2 - z_1 = 0,2531$

a = 2,364

0,7976

97,125

19°C.

0,2593

a = 2,277

45

151

147

149

65°

157

147

19°C

596

0,2562

a = 2,331

21½

201,5

198,5

200,25

47°

202,5

198,5

801

19°C

0,2821

a = 2,349

7½

261

252

259

256,66

27°

255

1028

19°C

$z_2 - z_1 = 0,7976$

a = 2,319

0,7845

256,66

~~a = 2,401~~

15°C

0,2895

a = 2,401

21½

47°

196
201
196
202
795

198,75

19°C

0,255

a = 2,320

45

65°

149
146,5
149
146,5
591

147,75

15°C

0,245

a = 2,151

210

83°30'

103
94
103
95
395

98,75

14°C

$a_2 + a_1 = 0,7895$

$a_2 - a_1 = 0,8194$

$a_1 = 2,295$

$a_2 = 2,383$

Dn. 24. 15 p. a hegyaj / brakon feltöltve

0,8194

20 5½

85°30'

8°C.

62,5
62,5
62,5
62
249,5

62,375

0,2794

a = 2,453

45

65°

124
114
121,5
115
474,5

118,25

2°5 C.

0,2550

a = 2,320

21½

47°

167,5
171,5
167
171
677

169,25

7°5C.

0,2850

a = 2,373

7½

27°

231
222
201
221
905

226,25

7°5 C.

0,8250

226,25

7°25 C.

0,2900
a = 2,415

21½ — 47° — 7°25 C
165
172
165
171
673
168,25

0,2612
a = 2,376

45 — 65° — 7°
119
110
117
115
464
116

0,2738

20 64/4 — 80°30' — 7°
63
61
62
59
245
61,25

a = 2,404

z² − z₁ = 0,8250

a = 2,399

ste 6415 m.

0,7918

80°30'
62
59
62
57
62
60

6°
140

0,2531
a = 2,222

45 — 65° — 6°C.
108
113
109
112,5
442,5
110,625

0,2537
a = 2,308

21½ — 47° — 6°C.
165
156
165,5
159
645,5
161,375

0,2850
a = 2,373

7½ — 27° — 6°C.
221
214,5
222
216
873,5
218,375

z₂ − z₁ = 0,7918

a = 2,302

0,7843

218,375

6,5 C

0,2856

a = 2,378

21½

47°

6,5 C

160
160
160
160
162
645

161,25

0,2475

45

65°

6,5 C

114
108
114
109
447

111,75

0,2512

a = 2,252

210

83° 30'

6,5 C.

~~58~~ 69
54
68
55
246

61,5

a = 2,206

2-4-0,7843

a = 2,281

½ l 10 Kor friss hígjáru, az eszlelések kezdete 10¼

83° 30'

21,5

6,5°

46

22°

×91,5
×86,5
×89,
×86,5

155
152,5
154
154

21½

47°

208,5
205
208
205

7½

27°

23°

266
265,5
266
266

23°,25

21½ 209
206,5
47° 204
206
23°,25

46 153
65° 150
153
149,5
23°,5

210 103
83°30' 90
100
91
23°,25

12 h. 15 m. / 23,25 C. / 154
150
153
151

1 h. 21° 157 156,5
160 160

5 h. d. u. 17°5 C. 165
157
162
157

12 h. 23° 104
104 104

Febr. 1) d. 12 h.

12 h. 20° C. 106 108
107 107

1/2 10h 15m friss hígany; éjfélés kerdeke 10h 45m

7½	228,5
	223
27°	227
22°C.	223,5

21½	167
	165
47°	165
22°C.	165

4h	109
	105
65°	110
	105
22°C	

210	51,5
	48
83° 30'	57
	48
22°C.	

4h	108
	106
65°	109
	106
22°,5	

21½	162
	161
47°	160
	161
23°C	

7½	218,5
	218
27°	217,5
	219
23°C.	

Febr. 2. 10h 15m. friss hígag. Epelés kezdete 10h40m.

7½	23,5	
27°	234	
	235	
21,5C	235	
21½	175	
	171	
47°	173	
	172	
22C		
46	116,5	
	112	
6,5°	115,5	
	112	
22C		
211	66,5	
	59	
83°30'	67	
	58,5	
22°,25C		

46	116	
	111,5	
6,5°	116	
	111	
22,75C		
21½	165	
	161	
47°	163	
	163	
23C		
7½	225	
	225	
27°	225	
	225	
23,5C		

21½	165	
47°	163	
	166	
23°,5C	163	
46	110,5	
65°	108	
	111,5	
	109	
23°,5		
20	50,5	
83°30'	50	
	57	
	50	
23°,75		

46	113	
65°	106	
	111	
	105	
23°,75		
21½	165	
47°	165	
	164	
	164,5	
23°,75		
7½	226	
	228	
27°	225	
	228	
23°,75		

Febr. 5. II Kontrollgas

7½		186,5
	27°	186,5
		185
	22°C	187
21½		126
	47°	123,5
		124
	22°,75C	122
4b		69,5
	6,5°	66,5
		69
	23C	68
20g		10
	83°30'	9
		10
		10
	23°,5	

4b		69
	6,5°	61
		70
	23°,5	62
21½		123
	47°	122
		123
	23°,75	122
7½		178,5
	27°	178
		178
	23°,75	178,5

21½ 47° 24°	121 122,5 120,5 122	
46 65° 24°	68 66 68 65,5	
209 83°30' 24°	10 10 9,5 11	

46 65° 24°	71 62,5 71 62,5	
21½ 47° 24°	125 124 125 124	
7½ 27° 24°	181 181,5 180,5 181,5	

Febr. 5. d. u. 4h 30 m. a délelőtti higg.

7½	27°	20°C
185	184	183	184
21½	47°	20,5
129	127	128	127
4h	6,5°	20°,75
74	72	73	72
20	43°50'	21°
17,5	1,5	17,5	17,4
4h	6,5°	22°
66	61,5	66,5	6,5	67,5
21½	47°	22°
120	121	119	121
7½	27°	22°
17,5	17,5	17,5	17,5

21½	119,5	
	117	
47°	119,5	
	118,5	
22°,25		
46	66	
	64	
65°	65	
	64,5	
22°,5		
207	9	
	6	
83°30'	8	
	9	
	9	
22°,5	9	

	~~7~~	
	62	
65°	62	
	62	
22½	62	
	116	
	116	
47°	117	
22,5	115	
	174	
	174	
27°	174	
	174	
22,5	174	

205		
83°30′	19	
	15,5	
	18.	
	1,5	
19°		
4½	72	
65°	68	
	71	
19°	68	
21½	120	
	120,5	
47°	120	
	121	
19°		
7½	176	
	178	
27°	176	
	178,5	
19°		

8/2 regi mágnesből.	172	
7½	168	
27°	170	
	168	
20		
21½	118½	
47°	114	
	118	
	115,	
20		
46	64	
65°	64	
	60	
	64	
20		
206	10	
85° 20	11	
	13	
	11	
20		

4/6	65°	65
		62
		65
		60
	20	
21½	47°	116,5
		114,5
		116
		114
	20	
7½	27°	170
		165
		169
		166
	20°	

7½	27°	169
		172
		170
		172
	20½	
21½	47°	110
		109
		110
		111
	20½	
4/6	65°	68
		65
		68
		65
	20½	
20/6	80,20	11
		11
		11
		11
	20½	

46	69,5	
65°	62	
	68	
21°	64,5	
21½	120	
47°	117,5	
	120	
21°	118	
7½	175,5	
27°	175,5	
	175,5	
21°	175,5	

21½	119	
47°	117	
	119	
21°	116	
46	66,5	
65°	62	
	65	
21°	62,5	
206	10	
80°20'	9	
	10	
21°	9,5	

75° 230
240
50° 240 } 910
60

75° 185
240
50° 240 } 365
240

75° 168

50° 56 41

50° 55 240 240
75° 0 0 171 } 364

75° 160 0 0
50 240 240 44 } 364

50° 56
171 } 365
75°

75° 165 0 0
50° 240 240 52 } 367

50° 66 240 240
75° 0 0 178 } 368

75° 168 56
50° 56 } 368

365
364
364
365
367
364
368

2560 | 366,66 мм.
46 480
40

50°	75	0	240	390
75°	0	240	185	
75°	170	240	0	410
50	240	0	80	
50	93	0	240	397
75	0	240	196	
75	170	240	0	413
50	240	0	83	
50	95	0	240	414
78°	0	240	181	
75	168	0	0	412
50	240	240	80	
50	97	240	240	416
	0	240	147	

Sliyany:

72° 30'	reflex.		kap	
	158		158	240

2.

50° 44°	2	250	250	405
	0	0	97	
44°	94	0		406
	250	250		
44°				
72°	246	250		403
	0	97		

a = 2,493

240
75
55
370

25	95
240	240
44	59
377	344

75

Jan. 7.

III

84° 39'

φ = 2° 40'

4	4
3,5	3,5
3	3,5
4	3,5
4	3,5

3,95

0,315

a = 2,4486

67,5 | 67,5
67 | 67
66 | 67,5
66 | 67,5
67 | 66,5

13° 37'

φ = 13° 11'

66,95

MAGYAR
TUDOMÁNYOS AKADÉMIA
KÖNYVTÁRA

114,5 | 114
113,5 | 114,5
114,5 | 11,5
113 | 11,3
114,5 | 11,5

47° 47'

φ = 21° 6'

114,15

0,236

2,4406

Diff.

0,551

a = 2,4013

2

84° 24'

φ = 2° 48'

~~2,5~~ 98	99,5
~~4~~ 98	98,5
~~2~~ 99	99,5
98	98
98	98

98,45

0,3307

a = 3,6911

~~166,5~~	164
~~164~~	163
~~164~~	163,5
166	165
~~165~~	164,5
165,5	
164,5	
166	

164,6

0,208

a = 2,2818

207	205
206	206
206	207
207	206
207	205

206,2

48° 53'

φ = 20° 34'

Ohnes

a = 2,4734

Ohnes

0,5087

~~a = 2,2815~~

$\varphi = 20° 34'$ 206,2

63° 28'

165	166
165	165,5
165	166
166	165
165	166,5

0,204

$a = 2,2921$

$\varphi = 13° 16'$ 165,5

84° 26'

$\varphi = 2° 47'$

103	100
102,5	100
100	101
102	100
102	100

0,3223

$a = 2,5023$

101,05

Összes

0,5263

2,4164

I)

$\varphi = 2°47'$ 101,05

64° 52'

158 159
157,5 158
157 160
157 158
158 157

0,2795

a = 2,3233

$\varphi = 12°34'$ 156,95

48° 52'

203,5 ~~203~~
203,5 203,5
204 203,5
203,5 204
204 204
~~203~~
203,5

0,2337

a = 3,4114

Отнем

$\varphi = 20°34'$ 203,7

0,5132

a = 2,3559

1) $9^\circ\ 7'$ / $28^\circ\ 37'$ } 0,5700 — $a = 2{,}4152$

2) $9^\circ\ 15'$ / $28^\circ\ 32'$ } 0,5650 — $a = 2{,}4114$

3) $9^\circ\ 15'$ / $29^\circ\ 20'$ } 0,5975 — $a = 2{,}4078$

4) $8^\circ\ 59'$ / $29^\circ\ 20'$ } 0,6100 — $a = 2{,}4686$

5) $8^\circ\ 59'$ / $29^\circ\ 30'$ } 0,6150 — $a = 2{,}4682$

6) $8^\circ\ 50'$ / $29^\circ\ 29'$ } 0,6075 — $a = 2{,}4203$

7) 9° / $28^\circ\ 29'$ } 0,5875 — $a = 2{,}4768$

8) $9^\circ\ 12'$ / $28^\circ\ 29'$ } 0,5875 — ~~$a = 2{,}4998$~~ ~~$2{,}5053$~~ $a = 2{,}5053$

9) $9^\circ\ 12'$ / $30^\circ\ 3'$ } 0,6125 — $a = 2{,}4199$

10) $7^\circ\ 7'$ / $24^\circ\ 57'$ } 0,5298 — $a = 2{,}4348$

11) $6^\circ\ 55'$ / $25^\circ\ 16'$ } 0,5455 — $a = 2{,}4396$

12) $2^\circ\ 30'$ / $21^\circ\ 44'$ } 0,5554 — $a = 2{,}3624$

13) $2^\circ\ 40'$ / $21^\circ\ 6'$ } 0,5510 — $a = 2{,}4013$

31,6016

14) 2° 48' } 0,5387 — a = 2,4734
20° 34' }

15) 2° 47' } 0,5263 — a = 2,4164
20° 34' }

16) 2° 47' } 0,5132 — a = 2,3559
20° 34' }

17) 2° 20' } 0,5035 — a = 2,2528
20° 31' }

18) 2° 20' } 0,5165 — a = 2,3704
20° 4' }

19) 2° 39' } 0,4910 — a = 2,3052
20° 4' }

20) 2° 39' } 0,5205 — a = 2,3525
20° 23' }

21) 2° 18' } 0,5205 — a = 2,3502
20° 23' }

22) 2° 18' } 0,5255 — a = 2,3263
20° 42' }

23) 2° 50' } 0,5265 — a = 2,3975
20° 42' }

24) 2° 50' } 0,5515 — a = 2,3885
21° 38' }

25) 2° 50' } 0,5603 — a = 2,4287
21° 37' }

26) 2° 50' } 0,5400 — a = 2,3499 ~~2,3931~~
21° 33' }

~~30,8109~~
30,7697

27) $2^\circ 50'$ } 0,5255 $21^\circ 33'$ } $a = 2,2868$

28) $2^\circ 50'$ } 0,5680 $21^\circ 30'$ } $a = 2,4782$

29) $2^\circ 40'$ } 0,5405 $21^\circ 30'$ } $a = 2,3435$

30) $2^\circ 40'$ } 0,5510 $21^\circ 30'$ } $a = 2,3890$

1 – 9 érlaletek ömny lencsével, a többiek üveggel.

Közép érték · $a = 2,3966$

Legnagyobb talált érték 8 hámi $a = 2,5053$

legkisebb talált érték 17 hámi $a = 2,2528$

Egybehasonlítás.

Eötvös	2,397
Laplace	2,55
Poisson	2,554
Hagen	2,62 – 2,68
Bède	2,66
Danger	2,59
Desains	2,62 – 2,65
Quincke	2,861 – 2,941

1)	2°30′ / 13°5′	0,3207	a = 2,4744	13°5′ / 21°44′	0,2347	a = 2,2350
2)	2°40′ / 13°11′	0,3150	a = 2,4486	13°11′ / 21°6′	0,2360	a = 2,4406
3)	2°48′ / 13°6′	0,3307	a = 2,6911	13°6′ / 20°34′	0,2080	a = 2,2818
4)	2°47′ / 13°16′	0,3223	a = 2,5023	13°16′ / 20°34′	0,2040	a = 2,2921
5)	2°47′ / 12°34′	0,2795	a = 2,3233	12°34′ / 20°34′	0,2337	a = 2,4114
6)	2°35′ / 12°37′	0,3152	a = 2,548	12°37′ / 20°34′	0,2040	a = 2,109
7)	2°50′ / 12°42′	0,2948	a = 2,4243	12°42′ / 21°37′	0,2655	a = 2,4335
8)	2°50′ / 12°30′	0,2855	a = 2,3931	12°30′ / 21°33′	0,2545	a = 2,3031
9)	2°50′ / 12°30′	0,2730	a = 2,2883	12°30′ / 21°33′	0,2525	a = 2,2851
10)	2°50′ / 12°30′	0,3075	a = 2,5691	12°30′ / 21°30′	0,2605	a = 2,3703
11)	2°40′ / 12°30′	0,2925	a = 2,4233	12°30′ / 21°30′	0,2480	a = 2,2657
	2°40′ / 12°30′	0,2920	a = 2,4192	12°30′ / 21°30′	0,2590	a = 2,3567

Középérték $a = 2,4585$

A görbületi sugár középértékben
körülbelül 138 m.m.
$a^2 = 6,0418$

Középérték $a = 2,3153$

A görbületi sugár középértékben
körülbelül 5 m.m.
$a^2 = 5,3592$

1) 9/10 $\varphi_1 = 45° - 16° 28' 10'' = 28° 31' 50''$
$\varphi_2 = 45° - 35° 53' 10'' = 9° 6' 50''$ } 0,5700 $-a\sqrt{2} = 2,4152$

2) 3/10 ~~$\varphi_1 = 45° - 35° 45' = 9°$~~
~~$\varphi_2 = 9° 6' 50''$~~
0,5650
$\varphi_1 = 28° 31' 50''$
$\varphi_2 = 45° - 35° 45' = 9° 15'$
$-a\sqrt{2} = 2,4114$

3 9/10 $\varphi_1 = 45° - 15° 39' 40'' = 29° 20' 20''$
$\varphi_2 = 45° - = 9° 15'$ 0,5975
$-a\sqrt{2} = 2,4078$

4) $\varphi_1 = 29° 20' 20''$
$\varphi_2 = 45° - 36° - 30'' = 8° 59' 30''$ 0,6100 $-a\sqrt{2} = 2,4686$

5) $\varphi_1 = 45° - 15° 31' = 29° 29'$
$\varphi_2 = 8° 59' 30''$ 0,6150 $-a\sqrt{2} = 2,4682$

6) $\varphi_1 = 29° 29'$
$\varphi_2 = 45° - 36° 10' = 8° 50'$ 0,6075 $-a\sqrt{2} = 2,4203$

7 11/12) $\varphi_1 = 45° - 16° 30' 50'' = 28° 29' 10''$
$\varphi_2 = 45° - 35° 59' 30'' = 9° 30''$ 0,5875 $-a\sqrt{2} = 2,4768$

8) $\varphi_1 = 28° 29' 10''$
$\varphi_2 = 45° - 35° 47' 30'' = 9° 12' 30''$ 0,5875 $-a\sqrt{2} = 2,5053$

9 $\varphi_1 = 45° - 14° 56' 40'' = 30° 3' 20''$ 0,6125
$\varphi_2 = 9° 12' 30''$
$-a\sqrt{2} = 2,4199$

vilamiditapi erő
frahamerő
inditási/pályamenet.
18 lapon.

$26,8679/11/ = 2,4425$
22
48
46
27
59

2,4152
2,4114
2,4686
2,4078
2,4682
~~2,4203~~
2,4768
2,5053
2,4199
2,4348
2,4396
2,4203
26,8679

$$\frac{\ell^2 - \ell_1}{\sqrt{1-\cos\varphi_2} - \sqrt{1-\cos\varphi_1}}$$

$$\varphi = \frac{\frac{\pi}{2} - \psi}{2}$$

$$\frac{965}{2000} = \psi$$

1650

500 705

1050

$\varphi_1 = 72° 1'$ $\quad \varphi_1 = 45° - 36° 30'' = 8° 59' 30''$ | $\varphi_2 = 68° 18' 40''$ $\quad \varphi_2 = 45° - 34° 9' 20'' = 10° 50' 40''$

$z_2 - z_1 = -\frac{13}{200} = -0,065$

$\cos\varphi_1 = 0,9877$ $\quad 1 - \cos\varphi_1 = 0,0123$ $\quad \log(1-\cos\varphi_1) = 0,08991 - 2$

$\cos\varphi_2 = 0,9822$ $\quad 1 - \cos\varphi_2 = 0,0178$ $\quad \log(1-\cos\varphi_2) = 0,25042 - 2$

$\frac{1}{2}\log(1-\cos\varphi_1) = 0,04495 - 1$

$\frac{1}{2}\log(1-\cos\varphi_2) = 0,12521 - 1$

$\sqrt{1-\cos\varphi_1} = 0,1109$

$\sqrt{1-\cos\varphi_2} = 0,1334$

650/101/ = 6,4356

606
440
404
360
360
570
505
650

$-a\sqrt{2} = \frac{0,065}{0,0225} = 2,8888$

650/225/ = 2,8888

450
2000
1800
2000
2250

$\sqrt{1-\cos\varphi_1} = 0,1334$

$\varphi_2 = 45° - 36° 26' 20'' = 14° 33' 20''$

$\cos\varphi_2 = 0,9679$ $\quad \sqrt{1-\cos\varphi_2} = 0,0321$

$\log(1-\cos\varphi_2) = 0,50651 - 2$ $\quad \frac{1}{2}\log(\ ) = 0,2532 - 1$

$\sqrt{1-\cos\varphi_2} = 0,1792$

$\sqrt{1-\cos\varphi_2} - \sqrt{1-\cos\varphi_1} = 0,0458$

210/2000/ = 0,1857

2000
1800
2000
2000
2000

210/200/0,1050
200
1000

$\varphi_2 = 45° - 24° 2' 30''$
$= 20° 57' 30''$

1857/458 =

1050/458/ 2,2924

916
1340
916
4240
4122
1180
916
2640

$\cos\varphi_2 = 0,9339$

$1 - \cos\varphi_2 = 0,0661$

$\log(\ ) = 0,82020 - 2$

$\frac{1}{2}\log = 0,41010 - 1$

$\sqrt{1-\cos\varphi_2} = 0,2580$

0,1234

$\sqrt{1-\cos\varphi_2} - \sqrt{1-\cos\varphi_1} = 0,1246$

610/200/ = 0,05
600
100

$z_2 - z_1 = \frac{61}{200} = 0,05$

3500/1246/ = 2,809
2492
10080
9968
1120
1121

$\varphi_2 = 45° - 17° 29' = 27° 31'$

360/200/0,18
200
1600

$\cos\varphi_2 = 0,8869$

$1 - \cos\varphi_2 = 0,1131$

$\log(\ ) = 0,05346 - 1$

$\frac{1}{2}\log(\ ) = 0,02670 - \frac{1}{2}$
$= 0,52670 - 1$

$\sqrt{1-\cos\varphi_2} = 0,3363$

$\sqrt{1-\cos\varphi_1} = 0,2580$
To t'amo!

0,0783

1800/783/ = 2,2988
1566
2340
1566
7740
7047
6930
6264
666
6

To t'amo!

1) $\psi_1 = 71^\circ 46' 20''$ $\varphi_1 = 45^\circ - 35^\circ 53' 10'' = 9^\circ 6' 50''$

$\psi_2 = 60^\circ 21'$ $\varphi_2 = 45^\circ - 30^\circ 15' 30'' = 14^\circ 44' 30''$

$z_2 - z_1 = -0,1625$

$\cos\varphi_1 = 0,9875$ $1-\cos\varphi_1 = 0,0125$ $\log(\ ) = 0,09691-2$ | $\frac{1}{2}\log = 0,04845-1$

$\cos\varphi_2 = 0,9670$ $1-\cos\varphi_2 = 0,0330$ $\log(\ ) = 0,51851-2$ | $\frac{1}{2}\log = 0,25921-1$

$1625/699 = 33247$ $\sqrt{1-\cos\varphi_1} = 0,1118$ $\sqrt{1-\cos\varphi_2} = 0,1817$

1398
2270
2097
1730
1398
3320
2796
5240

$\sqrt{1-\cos\varphi_2} - \sqrt{1-\cos\varphi_1} = 0,0699$

$-a\sqrt{2} = \frac{1625}{699} = 2,0247.$

---

2) $\varphi_1 =$

~~$\varphi_2 = 45^\circ - 30$~~ $\varphi_2 = 23^\circ 44' 30'' = 21^\circ 12' 30''$ (45°)

$\cos\varphi_2 = 0,9323$ $1-\cos\varphi_2 = 0,0677$

$\log(\ ) = 0,83059-2$

$\frac{1}{2}\log = 0,41529-1$

$\sqrt{1-\cos\varphi_2} = 0,2600$

1817

$\sqrt{1-\cos\varphi_2} - \sqrt{1-\cos\varphi_1} = 0,0783$

$-a\sqrt{2} = \frac{2050}{783}$

$2050/783 = 2,6181$

1566
4840
~~9915~~
4698
1420
783
6370
6264
106

$\varphi_2 = 45^\circ - 16^\circ 28' 10'' = 28^\circ 31' 50''$

$\cos\varphi_2 = 0,8868$ $1-\cos\varphi = 0,1132$

$\log 1-\cos\varphi_2 = 0,05385-1$

$\frac{1}{2}\log(\ ) = 0,02692 - \frac{1}{2}$

$= 0,52692-1$ $0,336$

$\sqrt{1-\cos\varphi_2} = 0,336$

$\sqrt{1-\cos\varphi_1} = 0,260$

$0,076$

$2025/760 = 2,6513$

1520
4950
4560
3900
3800
1000
760
2400

febr 26-án homorú vízfelületen.

44°	250	250	Destillált víz			
56	0	85	240	3,075		
	85	250	250	374	614	3,106
84	0	0	211		3,127	
84	197	0	0			
56	250	250	92	395	640	3,263
	92	0				
44	250	87	245			
44	95	250	249			
56	0	96				
	96	250	250	396	625	
84	0	0	220			
84	210	0	0			
56	250	250	98	388	626	
	98	0				
44	250	96	248			
44	112	250				
56	0	105	257			
	105	250	250		642	
84	0	0	220	385		
84	210	0	0			
56	250	250	105	389	644	
	105	0				
44	250	110	255			

Ebr- 26. d. u. homorú vírfelületeken

44	141	250	256		646
56	~~250~~	125			
	125	250	250	390	
84	0	0	245		
84	225	0	0	398	646
56	250	250	123		
	123	0		248	
44	250	121			
44	143	0	246		645
56	250	129			
	129	250	250	399	
84	0	0	240		
84	228	0	0	404	632
56	250	250	128		
	128	0		232	
44	250	120			
44	125	250	253		646
56	0	122			
	122	250	250	393	
84	0	0	229		
84	217	0	0	396	655
56	250	250	113		
	113	0		259	
44	250	122			

Febr. 21-én d. e. ~~Homérő~~ mélyítő lelem.

70°	221	250	453
44	0	28	
44	45	0	448
70	250	240	

magasabb meniscus

70	22	250	250	456
44	0	0	66	
44	80	0	0	443
70	250	250	23	

még magasabb meniscus

70	150	250	250	454
44	0	0	196	
44	201	0	0	457
70	250	250	160	

alacsonyabb meniscus

70	21	250	250	486
44	0	0	35	
44	55	0	0	474
70	250	250	29	

70	20	250	250	462
44	0	0	54	
44	71	0	0	462
70	250	250	20	
70	25	250	250	461
44	0	0	64	
44	72	0	0	462
70	250	250	24	

a készülék beállítva marad

Még alacsonyabb

70°	227	250	427
44°	0	50	
70°	54	0	434
70°	250	208	

70°	126	0	0	517
44	250	250	140	
44	142	250	250	522
70	0		120	
70	127	250	0	508
44	250		135	
44	129	250	250	511
70	0		118	
70	126	250	0	502
44	250		126	
44	126	250	250	506
70	0		124	
44	135	250	250	521
70	0		114	
70	119	250	0	517
44	250		126	
44	126	250	250	573
70	0		122	
70	129	250	0	507
44	250		126	
44	134	250	250	573
70	0		121	
70	126	250	0	570
44	250		126	
44	128	250	250	520
70	0		118	
70	125	250	0	505
44	250		120	

Lamatre, Edmundo, 20, d. e.

feltöltve, magyarázó ábrával

44	2	0		
70	250	204		452
70	195	250		445
44	0	0		
44	8	0		446
70	250	204		
70	207	250		445
44	0	13		
44	80	0	0	435
70	250	250	85	
70	21	210	250	444
44	0	0	77	
44	95	0	0	433
70	250	250	28	
70	152	250	250	443
44	0	0	209	

vár lett elvéve

~~44~~	~~142~~			
~~70~~				
70	205	250	250	459
44	0	0	246	
44	244	0	0	471
70	250	250	215	
70	212	250	~~2~~	460
44	0	2		
44	70	0		456
70	250	216		
70	78	250	250	457
44	0	~~+01~~	121	
44	130	0	0	460
70	250	250	90	

ugyhol levéne 70/44 }438 {44/70} 441

70°	215	250	}	445
44°	0	18		

44°	15	0	}	450
70°	250	215		

70°	216	250	}	448
44°	0	18		

Lehet 20. d. e.

Lehet 20 d. e.

44°	61	0	0	} 446
70	250	250	7	

70°	9	250	250	} 437
44	0	0	72	

44	77	0	0	} 447
70	250	250	24	

70	22	250	250	} 436
44	0	0	86	

kigyony vesztség

44°	123	0	333
70°	250	206	
	206	0	152
88°,5	250	108	

magtömlve

88°,5	33,5	250	159,5
70°	0	124	
	124	250	355,5
44°	0	18,5	

44°	2,5	0	243
70°	250	115,5	
	115,5	0	152,5
88°,5	250	18	

88°,5	35	250	150
70°	0	135	
	135	250	243
44°	0	42	

44°	24,5	0	358,5
70°	250	133	
	133	0	155
88°,5	250	28	

88°,5	52	250	148
70°	0	154	
	154	250	348
44°	0	56	

44°	50	0	346
70°	250	146	
	146	0	153
88,5	250	49	

88°,5	58,5	250	148,5
		160	
70°	0		
	160	250	345
44°	0	65	
44°	57	0	343
	250	150	
70°			
	150	0	157
88°,5	250	57	
88°,5	64	250	148
	0	162	
70°	162	250	
	0	68½	343,5
44°			

Vízhorony

44° × 51 0 0 } 534
70° 250 250 86 }

~~70°~~ 98 ~~250~~ ~~250~~
0 0 136
124
98

44° 150 — } 529
70° + 179 }

70° 182 } 500
44° 182

~~70°~~
44° 170 182 } 512

Valori verticali.

70 151 0 0 } 514
44 250 250 165

44° 170 250 250 } 525
70° 0 0 145

70° 143 0 0 } 523
44° 250 250 166

44° 170 } 530
70° 140

70° 141 } 529
44 164

44° 165 } 523
70° 142

70° 145 } 526
44° 161

44° 158 } 515
70° 143

20/6 állott konvoron vár

26	72	250 250	354	
50	0	0 218		
~~50~~	~~218~~	~~250~~	~~618~~	
~~65~~	~~0~~	~~140~~		
26	77	250 250	357	
50	0	0 220		
50	220	250	261	618
65	0	209		
65	209		192	
80	17			810
80	28		190	796
65	218			
65	218	0	262	606
50	250	230		
50	230	0 0	344	
26	250	250 74		

hens avat veretten 21

26	3	250 250	418	
50	0	0 85		
50	85	250	314	
65	0	21		732
65	21	258	230	
50	0	41		962
80	52	0	230	950
65	250	22		
65	22	0	311	720
50	250	92		
50	92	0	409	
26	250	252		

26	242	250	418	
50	0	74		
50	74	250	301	719
65	0	23		
65	23	250	229	
80	0	44		948
80	52	0	225	946
65	258	27		
65	27	0	308	722
50	250	85		
50	85	0	415	
26	250	250		

21/6 a tegnapi pénzavar vár

26	116,5	250	383	
50	0	22		
50	22	250 250	292	675
65	0	0 240		
26	168	250	381	
50	0	27		
50	27	250 250	295	676
65	0	0 242		
65	242		210	886
80	32			875
80	45		208	
65	253			
65	0	0	292	667
50	250	45		
50	45	0	375	
26	250	170		

26/ pův. vývrt dlouhovrtu

26	139 0	271	
50	250 260		
50	117 0	264	635
65	250 24		
65	24	200	
80	224		835
80	214	192	809
65	22		
65	22 250	265	617
50	0 17		
50	7 250 250	352	
26	0 0 155		

Igen kedves Barátom úr!

Kérem legyen szíves Dr. Kunos Ádámnak
kézbesíteni azt a mellékelt megnyugtatót.

4/6 [illegible] konvoru vinfeld

26	121	250	359	
50	0	12		
50	12	250	270	
65	0	242		629
65	242		191	
80	57			820
80	56	0	210	827
65	250	16		
65	16	0	270	613
50	250	26		
50	26	0	343	
26	250	129		
26	129	250	266	
50	0	23		
50	23	250	263	
65	0	10		629
65	10	250	207	
80	0	50		826

4/6 legnapi konvoru vinfeld

80	34		204	817
65	238			
65	238	0	267	613
50	250	255		
50	05	0	346	
36	250	96		

36	93	250	348	
50	0	50	245	
50	245	250	262	
65	0	222		610
65	222		197	
80	56			807
80	47		208	809
65	255			
65	5		259	601
50	264			
50	14	0	342	
26	250	106		k

[illegible]

26	184	250	375	
50	0	59		
50	59	250	280	
65	6	29		655
65	29	250	209	864
80	0	70		
80	72	0	213	855
65	250	25		
65	25	0	271	642
50	250	56		
50	56	0	371	
26	250	177		
36	175	250	376	
50	0	49		
50	49	250	274	
65	0	25		650
65	25	250	214	
50	0	61		864

11/6 friss homorú vinkeli lel

80	100	0	206	864
65	250	56		
65	56	0	289	658
50	250	95		
50	95	0	269	
26	250	214		
26	197	0		
	250	250	56	
26	197	250	388	
50	0	59		
50	59	250	282	670
65	0	27		
65	27	250	217	887
80	0	60		
80	69	0	211	871
65	250	30		
65	30	0	283	660
50	250	63		
50	63	0	277	
26	250	190		

friss domború

26	189	0	267	
50	250	250	56	
50	56	0	269	624
65	250	75		
65	75	0	220	856
80	250	45		

13/6 feltöltött domború

80	180	250	195	
65	0	235		
65	235			
26	121	0	361	
50	250	232		
50	232	0	273	634
65	250	255		
65	5			
80	185		180	814
80	176	250	191	798
65	0	235		
65	235	250	255	607
50	0	230		
50	230	210	252	
26	0	128		
26	132	0	253	
50	250	225		
50	225	0	265	618
65	250	250		
65	0			
80	187		187	805
80	191		189	786
65	2			
65	250	250	262	597
50	0	240		
50	240	250	335	
26	0	155		

14/6 felé dombornira

80	114	250	204	838
65	0	162		
65	162	250	264	634
50	0	143		
50	143	250	265	
26	0	28		
26	47	0	366	
50	250	162		
50	162	0	283	648
65	250	195		
65	195	0	199	847
80	250	144		
80	136	250	184	804
65	0	202		
65	202	250	264	624
50	0	188		
50	188	250	356	
26	0	82		

17/6 felé dombornira

26	279	0	336	
50	250	210		
50	76	0	245	581
65	250	70		
65	70	0	194	775
80	250	14		

80	248		180	750
65	68			
65	68	250	248	570
50	0	70		
50	70	250	322	
26	0	2		

16/6 Ujonnan beállítva finom normalra

26	226	250	349	
50	0	127		
50	127	250	270	619
65	0	117		
65	117	250	187	806
80	0	180		
80	195	0	185	811
65	250	120		626
65	120	0	267	
50	250	147		
50	147	0	259	
26	250	256		
26	245	250	355	
50	0	140		
50	140	250	266	621
65	0	124		
65	124	250	187	808
80	0	187		
80	197	0	186	807
65	250	122		621
65	122	0	264	
50	250	147		
50	147	0	357	
	240	254		

6/6 [illegible] dombormű vízfelület

36	110	0	260		
50	250	120			
50	120	0	292		
65	250	162		652	
65	162	0	201		
80	250	113		853	
80	104	250	184		807
65	0	170			
65	170	250	280		622
50	0	140			
50	140	250	343		
36	0	47			

7/6 állott dombormű vízfelület

36	113	0	338		
50	250	201			
50	201	0	270		
65	250	221		608	
65	221	0	187		
80	250	158		795	1788
80	148	250	187		
65	0	211			
65	211	250	256		601
50	0	205			
50	205	250	345		
36	0	110			

36	115	0	348		
50	250	210			
50	210	0	256		604
65	250	219			
65	219	0	196		
80	250	165			800
80	161	250	195		792
65	0	216			
65	216	250	259		597
50	0	207			
50	207	210	338		
36	0	119			
36	125	0	250		
50	250	225			
50	225	0	280		610
65	250	225			
65	225	0	182		
80	250	167			792
80	162	250	186		779
65	0	224			
65	224	250	257		593
50	0	223			
50	223	210	342		
36	0	121			

36°	158 – 0	336		82°		134	
48°	250 – 72			72°			
48	72 – 0	247	583	72°		196	
60	250 – 75			60			
60	75 – 0	184	767	60		249	
72	250 – 141			48			
72	141 – 0	144	911	48		317	
82	250 – 247	n.		36			

Verblieben

82	40	130	892	82	229 0	156	917
72	190			72	250 125		
72	140 0	189	762	72	125 0	200	716
60	250 79			60	250 85		
60	79 0	246	573	60	85 0	235	556
48	250 75			48	250 70		
48	75 0	327		48	70 0	321	
36	250 152			36	250 141		

36	142 250	327		36	129 250	323	
48	0 65			48	0 66		
48	65 250	253		48	66 250	246	
60	0 62	n.		60	0 70		569
60	62 250	174	580	60	70 250	188	
72	0 134		758	72	0 122		752
72	134 250	162		72	122 250	162	
82	0 221			60	250		919

4/6 domború vízfelület

36°	32	0	310	
48	250	92		
48	92	0	226	
60	250	68		526
60	68		175	3
72	240			711
72	240	0	96	
82	250	89		807

82	92	250	100	807
72	22	242		
72	242		174	707
60	68			
60	68	250	222	528
48	0	96		
48	96	250	311	
36	0	25		

36	43	0	317	
48	250	112		
48	112	0	215	
60	250	77		522
60	77	0	172	
72	250	5		704
72	5		102	
82	107			806

82	107		104	805
72	3			701
72	7	250	180	
60	0	73		
60	73	250	218	521
48	0	105		
48	105	250	303	
36	0	52		

5/6 domború vízfelület n.p.

~~56~~	~~78~~	~~0~~	~~265(?)~~	
~~48~~	~~250~~	~~93~~		
~~48~~	~~92~~	~~0~~	~~226~~	
~~60~~	~~250~~	~~69~~		
~~60~~	~~69~~		~~172~~	
~~72~~	~~241~~			
~~72~~	~~241~~		~~96~~	
~~87~~	~~87~~			

~~82~~	~~922~~		~~110~~	806
~~72~~	~~222~~			
~~72~~	~~272~~		~~171~~	696
~~60~~	~~61~~			
~~60~~	~~61~~	~~250~~	~~224~~	525
~~48~~	~~0~~	~~87~~		
~~48~~	~~87~~	~~250~~	~~301~~	
~~36~~	~~0~~	~~36~~		

~~36~~	~~78~~	~~0~~	~~287~~	
~~48~~	~~250~~	~~110~~		
~~48~~	~~110~~	~~0~~	~~213~~	500
~~60~~	~~250~~	~~70~~		
~~60~~	~~70~~		~~174~~	674
~~72~~	~~247~~			
~~72~~	~~247~~	~~0~~	~~97~~	771
~~82~~	~~250~~	~~94~~		

6/6 homorú vízfelület

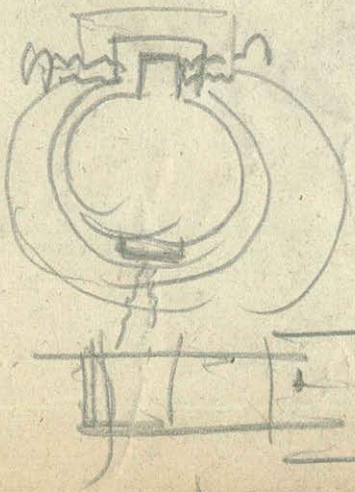
újból beállítva friss vízzel

36	32	250	250	414	
50	0	0	118		
50	118	250		309	723
65	0	59			
65	59	250		229	
80	0	80			952

80	86	0		223	928
65	250	59			
65	59	0		307	705
50	250	116			
50	116	0	0	398	
36	250	250	14		

36	17	250	250	407	
50	0	0	110		
50	110	250		309	716
65	0	57			
65	57	250		222	
80	0	79			938

80	84	0		224	924
65	250	58			
65	58	0		298	704
50	250	106			
50	106	0	0	406	
36	250	250	12		



$$\ddot{q}\,dp = m r \varphi$$

$$\int m\,q\,dr\,p$$

$$p\,dp = r\,dr$$

$$\int \log p = \alpha r^2$$

$$e^{r^2} = p$$