

[illegible]

Ha	bu	880	0.
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H $\begin{matrix} 10 \\ 100 \end{matrix}$ 0.94; 0.86; 0.70

$$t_1 \in [0, 50; 0, 30; 0, 18]$$

4

t_2	C	1.51	1.03	1.38
-------	---	------	------	------

 $t_2 = 1, 13; 1, 15; 1, 54$

H			2
		30	
t_1	0.20	0.58	0.30

$\frac{1}{2}$	0.96	1.31	1.07
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5

4 120

 $t = 0.62 \quad 0.72 \quad 0.96$

t_2	1.51	1.58	1.83
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H		100
---	--	-----

f_1	0.68	0.84	0.78
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1	1.25	1.65	1.57
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6

H	130
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 $t = 0, 11, 0.38, 0.64$ $f_2: 1.00; 1.89; 1.94$

$$K = 1 - \frac{\Delta E}{E} = 1 - \frac{0}{80} = 79$$

$$\eta = 1 - \frac{\Delta E}{P} = 1 - \frac{0}{120} = 100\%$$

$$K = 1 - \frac{\Delta E}{E} = 1 - \frac{0}{90} = 89$$

$$K = \frac{\Delta F}{F} = \frac{1 - 0}{130} = 129$$

$$VC = 1 \cdot \frac{\Delta E}{E} = 1 \cdot \frac{4 - 0}{100} = 99$$

$$\frac{\Delta E}{g} = \frac{129}{9.81/c^2} = 5.5$$

$$R = \frac{10}{\frac{1}{10}} = 10 \text{ g}$$

$$1) \frac{80}{0,80 + 1,51} \approx 0,346$$

$$2) \frac{80}{0,30 + 1,03} \approx 2,225$$

$$3) \frac{80}{0,68 + 1,38} \approx 26,1437$$

$$4) \frac{80}{0,20 + 0,96} \approx 77,586$$

$$5) \frac{80}{0,58 + 1,31} \approx 47,619$$

$$6) \frac{80}{0,30 + 1,84} \approx 65,693$$

$$7) \frac{100}{0,48 + 1,25} \approx 57,803$$

$$8) \frac{100}{0,84 + 1,65} \approx 40,1606$$

$$9) \frac{100}{0,78 + 1,57} = 42,553$$

$$k = 1 - \frac{\Delta E}{E}$$

$$g = 9,8 \text{ м/с}^2$$

$$M: 153,601$$

№

физикалық шама:

$$k = 1 - \frac{\Delta E}{E}$$

$$k = \frac{h'}{h}$$

$$h' = \frac{g(t_1 - t_2)^2}{8}$$

$$h_1 = \frac{9.8(1.51 - 0.80)^2}{8} \approx 0.61 \text{ м}$$

$$h_2 = \frac{9.8(1.03 - 0.30)^2}{8} \approx 0.65 \text{ м}$$

$$h_3 = \frac{9.8(1.38 - 0.68)^2}{8} \approx 0.60 \text{ м}$$

$$h_4 = \frac{9.8(0.96 - 0.20)^2}{8} \approx 0.62 \text{ м}$$

$$h_5 = \frac{9.8(1.31 - 0.58)^2}{8} \approx 0.58 \text{ м}$$

$$h_6 = \frac{9.8(1.07 - 0.30)^2}{8} \approx 0.64 \text{ м}$$

$$h_7 = \frac{9.8(1.25 - 0.48)^2}{10} \approx 0.58 \text{ м}$$

$$h_8 = \frac{9.8(1.65 - 0.84)^2}{10} \approx 0.64 \text{ м}$$

$$h_9 = \frac{9.8(1.57 - 0.78)^2}{10} \approx 0.82 \text{ м}$$

$$h_{10} = \frac{9.8(1.73 - 0.94)^2}{11} \approx 0.55 \text{ м}$$

$$h_{11} = \frac{9.8(1.72-0.86)^2}{11} \sim 0.61 \text{ м}$$

$$h_{12} = \frac{9.8(1.51-0.70)^2}{11} \sim 0.62 \text{ м}$$

$$h_{13} = \frac{9.8(1.51-0.62)^2}{12} \sim 0.64 \text{ м}$$

$$h_{14} = \frac{9.8(1.58-0.72)^2}{12} \sim 0.60 \text{ м}$$

$$h_{15} = \frac{9.8(1.83-0.96)^2}{12} \sim 0.61 \text{ м}$$

$$h_{16} = \frac{9.8(1.00-0.11)^2}{13} \sim 0.59 \text{ м}$$

$$h_{17} = \frac{9.8(1.89-0.98)^2}{13} \sim 0.62 \text{ м}$$

$$h_{18} = \frac{9.8(1.54-0.64)^2}{13} \sim 0.64 \text{ м}$$

$$K = \frac{11.19}{630} = 0.01$$

$$\alpha/\alpha: 0.01$$

$$K = \frac{E - \Delta E}{E} = \frac{E'}{E}$$

$$E = H \quad E' = h'$$

$$H_1 + H_2 + H_3 + H_4 + H_5 + H_6 = 630 \text{ м}$$

$$h'_{11} + h'_{12} + h'_{13} + h'_{14} + h'_{15} + h'_{16} + h'_{17} + h'_{18} + h'_{19} + h'_{20} = 11.19 \text{ м}$$

Жауабы: 2061

Мағамбетов Д. 86

№ 2

K: 4 - 0.5

E

мұқабасы F-шарықтық да содан айналыста кинетикалық әсерлерге ая $0.5 > 0$

да содан да кейін кинетикалық әсерлер шығып, $0.5 < 0.5$ және т.б. т.б.

Эксперимент нәтижелері келесі кестеде келтіріледі. Әр эксперимент үшін

рет қайталанған тәжірибе үшін $g = 9.8 \text{ м/с}^2$

1

2

3

80

90

100

$t_{\text{ср}}$ 0.80 0.80 0.68

0.80 0.58 0.30

0.48 0.84 0.78

1.51 1.73 1.38

0.90 1.31 1.02

1.25 1.65 1.52

4

5

6

1.10

1.20

1.30

$t_{\text{ср}}$ 0.94 0.86 0.70

0.62 0.72 0.96

0.77 0.98 0.64

1.23 1.72 1.54

1.51 1.52 1.23

1.00 1.80 1.54

$g = 9.8 \pm 0.07 \text{ м/с}^2$

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$$H = 80 \text{ см} = 0,8 \text{ м}, t_0 = 1,2 \text{ с}$$

Эксперимент - 1 $H = 80 \text{ см}$

$$t_2 - t_1 = 1,51 - 0,80 = 0,71 \text{ с}$$

$$K_1 = \frac{9,8 \cdot 0,71}{2\sqrt{2 \cdot 9,8 \cdot 0,9}} \approx 0,62$$

Эксперимент - 2

$$t_2 - t_1 = 1,32 - 0,96 = 0,36 \text{ с}$$

$$K_2 = \frac{9,8 \cdot 0,36}{2\sqrt{2 \cdot 9,8 \cdot 0,9}} \approx 0,28$$

Эксперимент - 3

$$t_2 - t_1 = 1,69 - 0,84 = 0,81 \text{ с}$$

$$K_3 = \frac{9,8 \cdot 0,81}{2\sqrt{2 \cdot 9,8 \cdot 1,0}} \approx 0,64$$

Эксперимент - 4

$$t_2 - t_1 = 1,75 - 0,94 = 0,79 \text{ с}$$

$$K_4 = \frac{9,8 \cdot 0,79}{2\sqrt{2 \cdot 9,8 \cdot 1,1}} \approx 0,60$$

Эксперимент - 5.

$$t_2 - t_1 = 1,58 - 0,72 = 0,86 \text{ c}$$

$$K_5 = \frac{98 \cdot 0,86}{2\sqrt{2 \cdot 98 \cdot 1,2}} \approx 0,65$$

Эксперимент - 6

$$t_2 - t_1 = 1,89 - 0,98 = 0,91 \text{ c}$$

$$K_6 = \frac{98 \cdot 0,91}{2\sqrt{2 \cdot 98 \cdot 1,2}} \approx 0,64$$

$$K_2 \approx 0,62$$

$$\text{Шаг 59: } K_5 \approx 0,29$$

$$K_8 \approx 0,64$$

$$K_2 \approx 0,60$$

$$K_2 \approx 0,58$$

$$K_2 \approx 0,64$$

$H = 1$

f_1, m, t_0

$$K = 1 - \frac{\rho E}{E}$$

E - шариктің жал сәйкес алдыңғы кінетикалық энергиясы

$\rho E > 0$ - жал сәйкес кінетикалық энергия шығыны

$$0 \leq K \leq 1$$

$$g = 9.8 \text{ м/с}^2$$

$H, \text{ м}$	80	100	120	140	160	180	200	220	240
$f_1, \text{ с}$	0.80	0.30	0.68	0.20	0.58	0.30	0.48	0.84	0.78
$f_2, \text{ с}$	0.80	0.30	0.68	0.20	0.58	0.30	0.48	0.84	0.78
$t_0, \text{ с}$	1.57	1.03	1.38	0.96	1.31	1.07	1.25	1.65	1.57

$H, \text{ м}$	120				130				
$f_1, \text{ с}$	0.94	0.88	0.70	0.62	0.72	0.98	0.11	0.93	0.64
$t_0, \text{ с}$	1.73	1.72	1.54	1.51	1.58	1.83	1.00	1.89	1.54

$$K = \frac{1}{1+x} \quad x = h$$

$$\Delta = K \pm x(h, m+1)$$

$$0 \leq K \leq 1$$

$$1) K = (1,51 - 0,80) 50 = 0,71 \cdot 50 = 35,5$$

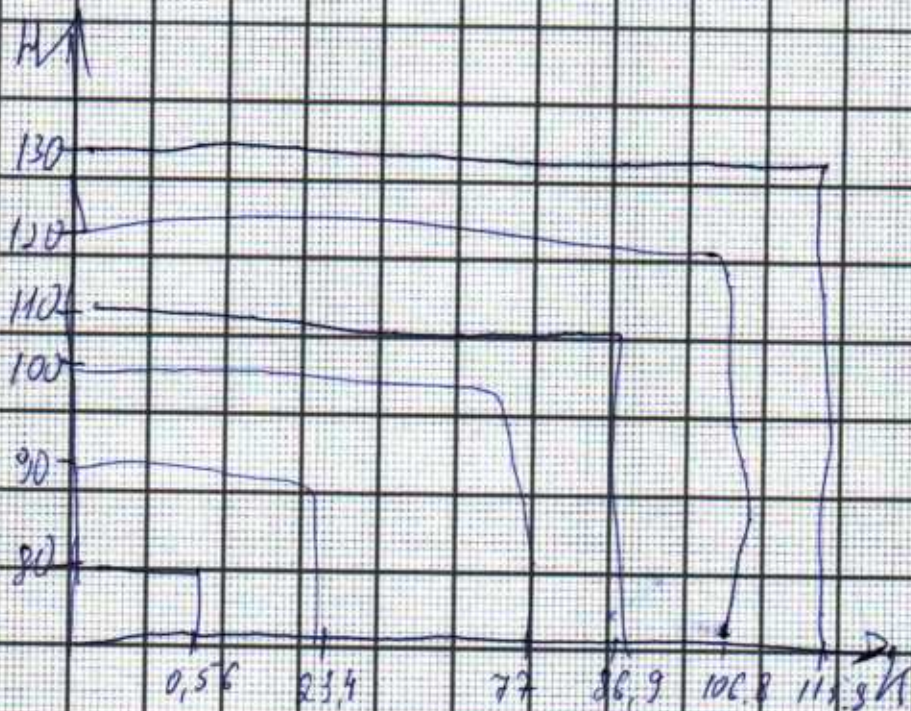
$$2) K = (0,96 - 0,70) 90 = 0,26 \cdot 90 = 23,4$$

$$3) K = (1,25 - 0,45) 100 = 0,80 \cdot 100 = 80$$

$$4) K = (1,75 - 0,94) 110 = 0,81 \cdot 110 = 89,1$$

$$5) K = (1,51 - 0,60) 120 = 0,91 \cdot 120 = 109,2$$

$$6) K = (1,00 - 0,4) 130 = 0,60 \cdot 130 = 78$$



	1	2	3
H, cm			
$t_{1,c}$	0,8		
$t_{2,c}$			

	1	2	3
H, cm	80	90	100
$t_{1,c}$	0,8 0,3 0,68 0,2	0,58 0,3 0,48	0,84 0,28
$t_{2,c}$	1,71 1,03 1,38 0,86	1,31 1,02 1,25	1,65 1,57

	1	2	3
H, cm	110	120	130
$t_{1,c}$	0,94 0,86 0,7 0,62	0,72 0,56 0,38	0,98 0,64
$t_{2,c}$	1,73 1,72 1,54 1,51	1,58 1,33 1	1,89 1,54

4)

Майраба: 4

$H, \text{cm} - 210$

$t_{1, \text{c}} - 0,94; 0,86; 0,70.$

$t_{2, \text{c}} - 1,73; 1,72; 1,54.$

Маяр мерке мұнда
сәтін жасап
ағарған.

t, c

$$E = \frac{t \cdot b}{H}$$

$$E_1 = \frac{1.51 \cdot 0.20}{90} = 0.0034$$

$$E_2 = \frac{1.02 \cdot 0.30}{90} = \frac{0.306}{90} = 0.0034$$

$$E_3 = \frac{1.78 \cdot 0.66}{90} = \frac{1.1748}{90} = 0.013$$

$$E_4 = \frac{0.96 \cdot 0.20}{90} = \frac{0.192}{90} = 0.0021$$

$$E_5 = \frac{1.31 \cdot 0.58}{90} = \frac{0.7608}{90} = 0.0084$$

$$E_6 = \frac{1.04 \cdot 0.30}{90} = \frac{0.312}{90} = 0.0035$$

$$E_7 = \frac{1.25 \cdot 0.48}{100} = \frac{0.6}{100} = 0.006$$

$$E_8 = \frac{0.84 \cdot 1.65}{100} = \frac{1.386}{100} = 0.01386$$

$$E_9 = \frac{1.54 \cdot 0.75}{100} = \frac{1.155}{100} = 0.01155$$

Маған: $F = F_0 + \lambda \ln g \cdot b =$

$b = 0,083 \text{ H}$

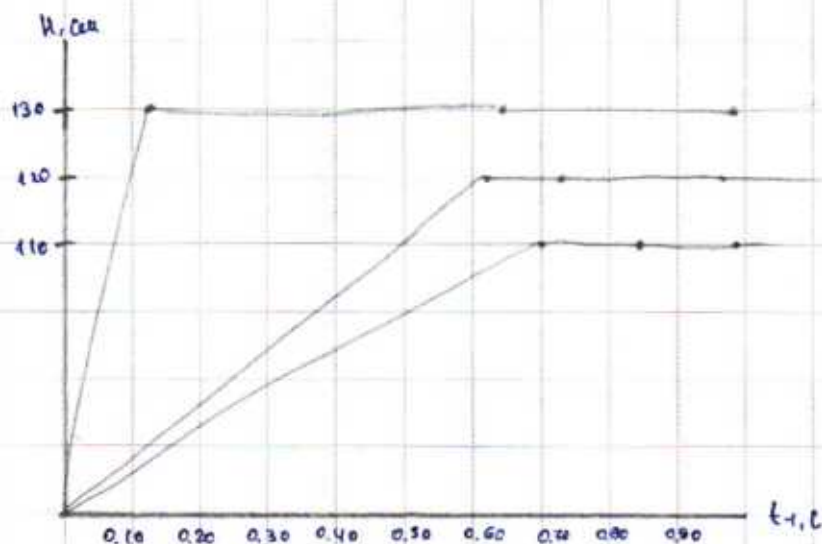
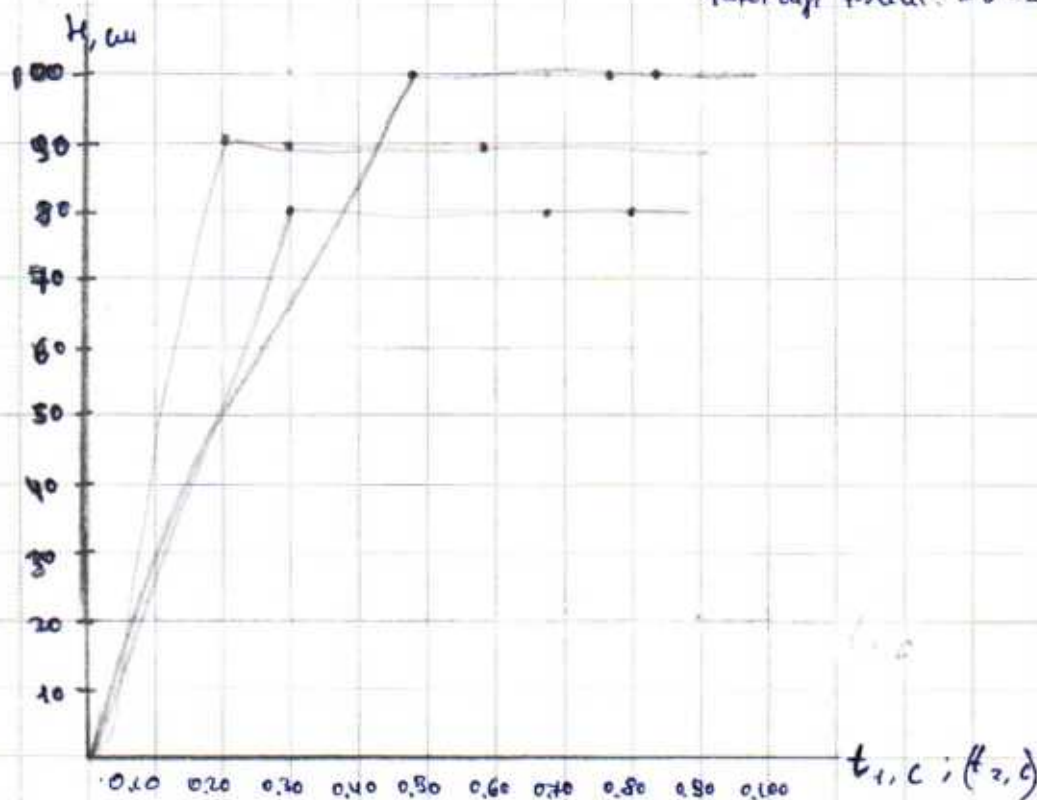
$b = \frac{E(XY) - \langle X \rangle \cdot \langle Y \rangle}{\langle X^2 \rangle - \langle X \rangle^2} \mid x = \lambda = 0,0835 \text{ H}$
 $Y = F$

$m = \frac{b}{g} = 8,472$

$\Delta b = \frac{2 \Delta F}{\Delta \lambda} = \frac{2 \cdot 0,05}{100 - 20} \text{ H} = 1,25 \cdot 10^{-9} \text{ H}$

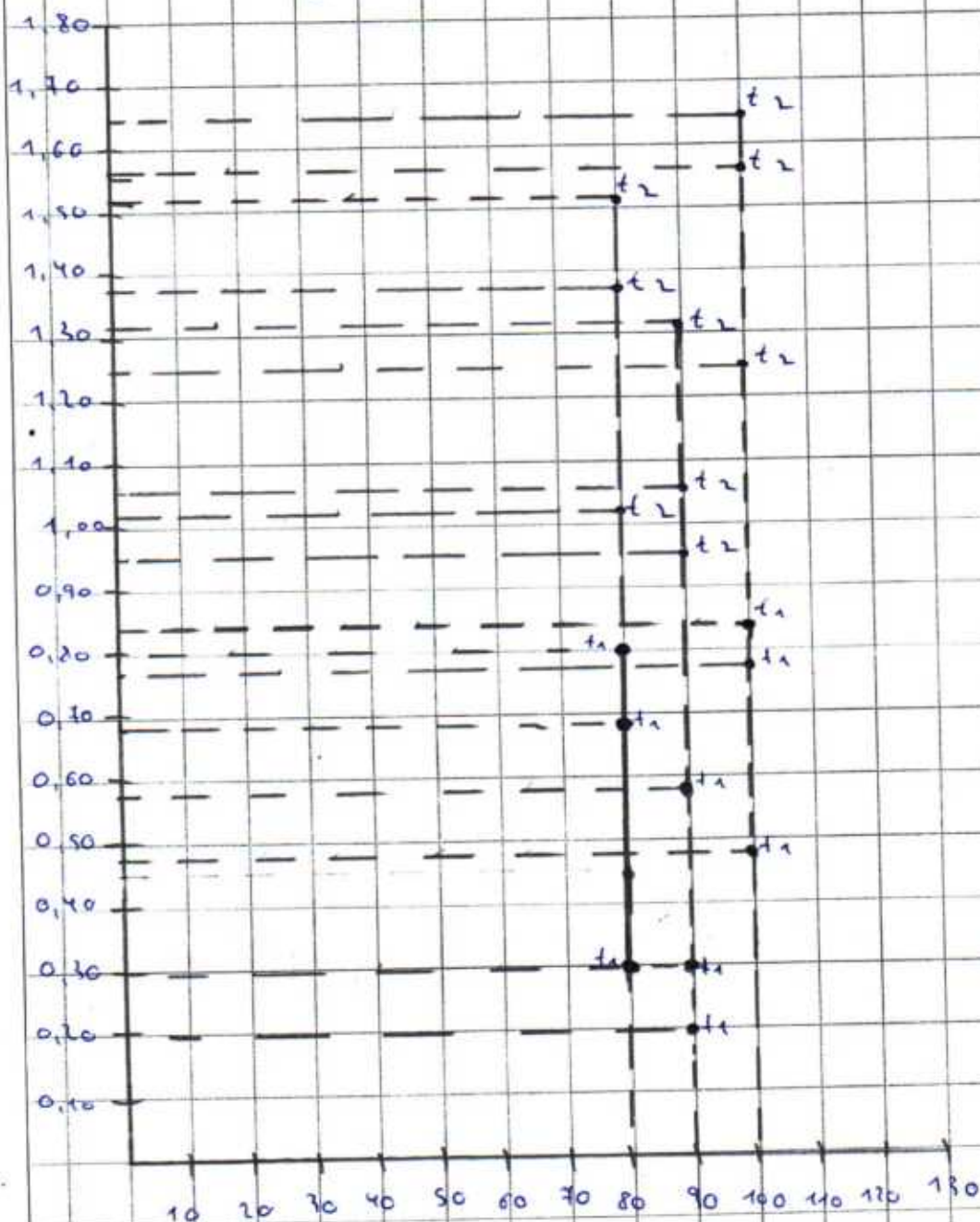
мәселен өлшеу дәлелімі: $\Delta m = \frac{\Delta b}{g} \approx 0,132$

Ғалым сұраған дәлелімі: $\Delta b = 2 \sqrt{\frac{\sigma_U^2}{6X^2 - b^2}} = 1,076 \cdot 10^{-3} \text{ H}$
 $n = 2$



К(участник) тағсыз: Мариктің үстелге сәлемдесуінің
серпінді, нәсіл де сәлемдік сәлемдік келісерінің
көз-қарымының мабәдә. Трагедиялар мен кестелер сәлемдік
Жұрал тағсыздар: Үстел менің марикі,
адам үстел, сәлемдік
неу-қаспаң бағасы:

$$K = 1 - \frac{\Delta E}{E}$$



N1.

$$g = 10 \text{ м/с}^2$$

$$t = 0,30; 0,30; 0,68$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

ш:

$$H_1 = \frac{10 \cdot 0,30^2}{2} = 3,2$$

$$H_2 = \frac{10 \cdot 0,30^2}{2} = 9$$

$$H_3 = \frac{10 \cdot 0,68^2}{2} = 23,192$$

$$\Delta k = \frac{3,2 + 9 + 23,192}{3} = 11,794$$

N3

$$g = 10 \text{ м/с}^2$$

$$t = 0,48; 0,34; 0,18$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

$$H_1 = \frac{10 \cdot 0,48^2}{2} = 11,52$$

$$H_2 = \frac{10 \cdot 0,34^2}{2} = 5,78$$

$$H_3 = \frac{10 \cdot 0,18^2}{2} = 1,62$$

$$\Delta k = \frac{11,52 + 5,78 + 1,62}{3} = 6,307$$

N2

$$g = 10 \text{ м/с}^2$$

$$t = 0,20; 0,58; 0,30$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

ш:

$$H_1 = \frac{10 \cdot 0,20^2}{2} = 2$$

$$H_2 = \frac{10 \cdot 0,58^2}{2} = 16,82$$

$$H_3 = \frac{10 \cdot 0,30^2}{2} = 4,5$$

$$\Delta k = \frac{2 + 16,82 + 4,5}{3} = 7,773$$

N4

$$g = 10 \text{ м/с}^2$$

$$t = 0,94; 0,86; 0,70$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

$$H_1 = \frac{10 \cdot 0,94^2}{2} = 44,13$$

$$H_2 = \frac{10 \cdot 0,86^2}{2} = 36,98$$

$$H_3 = \frac{10 \cdot 0,70^2}{2} = 24,5$$

$$\Delta k = \frac{44,13 + 36,98 + 24,5}{3} = 35,203$$

№5

$$g = 10 \text{ м/с}^2$$

$$t = 0,62; 0,72; 0,96;$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

Шеш:

$$H_1 = \frac{10 \cdot 0,62^2}{2} = 6,82$$

$$H_2 = \frac{10 \cdot 0,72^2}{2} = 7,92$$

$$H_3 = \frac{10 \cdot 0,96^2}{2} = 31,68$$

$$\Delta k = \frac{6,82 + 7,92 + 31,68}{3} = 50,969$$

№6

$$g = 10 \text{ м/с}^2$$

$$t = 0,11; 0,98; 0,64;$$

$$\text{Формула: } H = \frac{gt^2}{2}$$

$$\Delta k = \frac{H_1 + H_2 + H_3}{3}$$

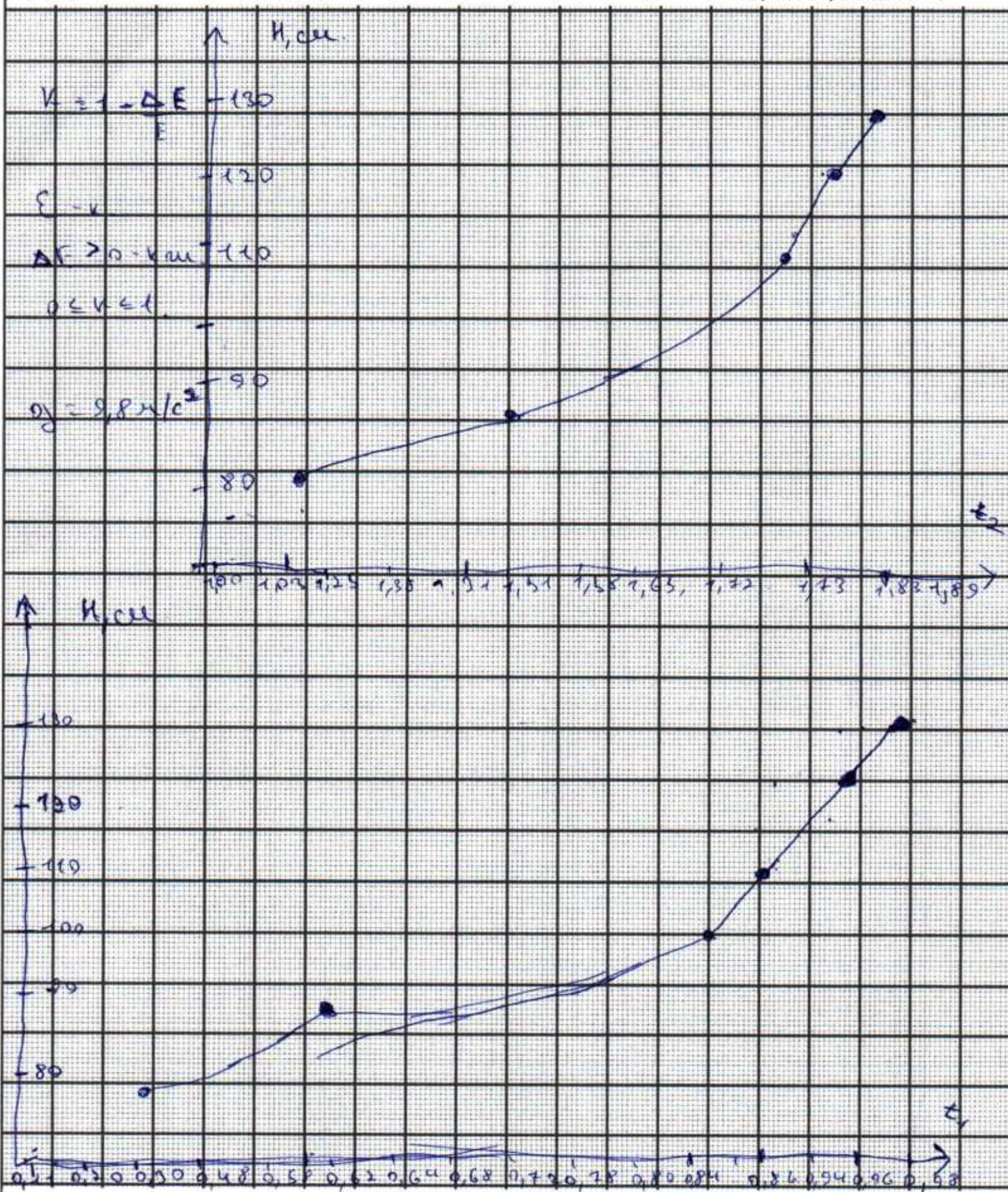
Шеш:

$$H_1 = \frac{10 \cdot 0,11^2}{2} = 0,605$$

$$H_2 = \frac{10 \cdot 0,98^2}{2} = 39,62$$

$$H_3 = \frac{10 \cdot 0,64^2}{2} = 14,8$$

$$\Delta = \frac{0,605 + 39,62 + 14,8}{3} = 20,223$$



$$K = 1 - \frac{4E}{g} \quad 4E > 0 \quad 0 \leq K \leq 1$$

$$g = 9.8 \text{ м/с}^2$$

1

2

3

4

5

6

H, м

80

90

100

110

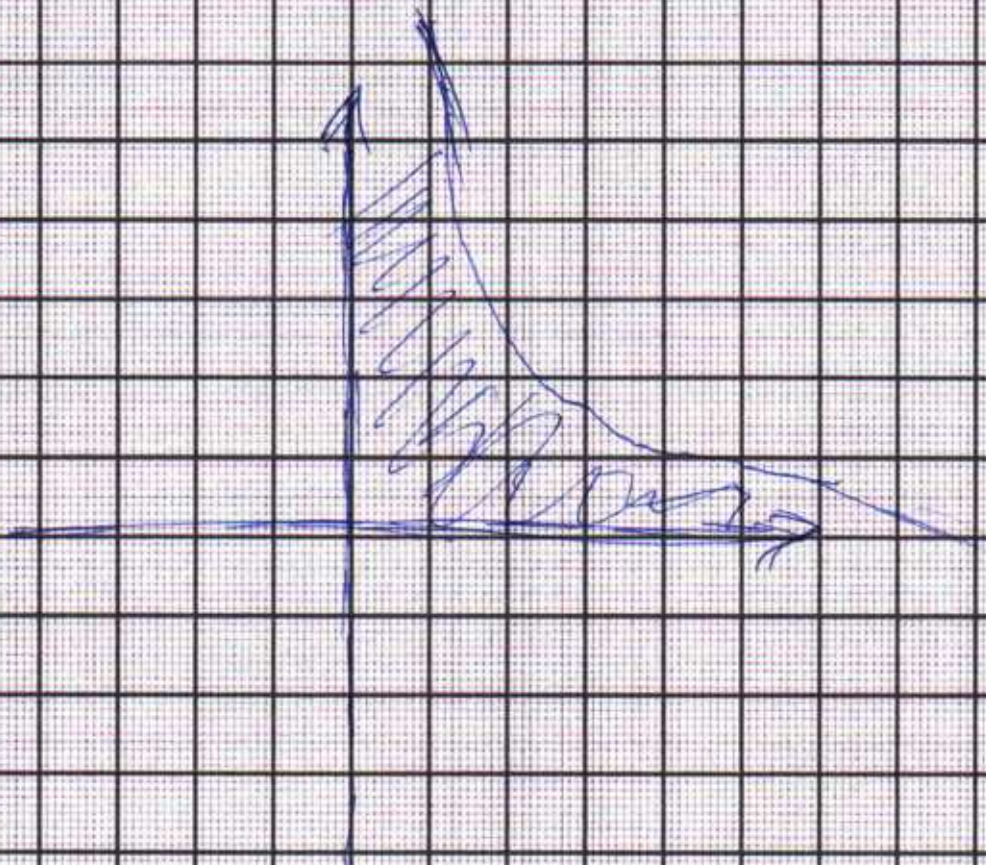
120

130

t_{1c} 0.80 0.80 0.68 0.80 0.58 0.80 0.44 0.78 0.94 0.76 0.90 0.62 0.74 0.86 0.71 0.98 0.64

t_{2c} 1.51 1.03 1.38 0.96 1.34 1.04 1.25 1.65 1.57 1.93 1.72 1.54 1.51 1.58 1.83 1.00 1.89 1.54

ΔK - ?



$$K_1 = 1 - \frac{30}{0,20} = 50,8$$

$$K_2 = 1 - \frac{80}{0,85} = 59,15$$

$$K_3 = 1 - \frac{20}{0,06} = 37,85$$

$$K_4 = 1 - \frac{90}{0,26} = 76,58$$

$$K_5 = 1 - \frac{90}{1,00} = 46,6$$

$$K_6 = 1 - \frac{30}{0,52} = 25,6$$

$$K_7 = 1 - \frac{100}{0,23} = 56,8$$

$$K_8 = 1 - \frac{100}{0,08} = 46,8$$

$$K_9 = 1 - \frac{100}{0,55} = -0,97$$

$$K_{10} = 1 - \frac{110}{0,07} = 40,1$$

$$K_{11} = 1 - \frac{110}{0,58} = 41,6$$

$$K_{12} = 1 - \frac{110}{0,24} = 48,1$$

$$K_{13} = 1 - \frac{120}{0,13} = 55,3$$

$$K_{14} = 1 - \frac{120}{0,65} = 57,17$$

$$K_{15} = 1 - \frac{110}{0,23} = 42,01$$

$$K_{16} = 1 - \frac{150}{0,11} = 116,1$$

$$K_{17} = 1 - \frac{150}{0,58} = 42,5$$

$$K_{18} = 1 - \frac{150}{0,28} = 58,6$$

$$K_1 = \frac{50,8 + 59,15 + 37,85}{3,8} = 13,05$$

$$K_2 = \frac{76,58 + 46,6 + 25,6}{3,8} = 19,26$$

$$K_3 = \frac{56,8 + 46,8 + (-0,97)}{3,8} = 10,47$$

$$K_4 = \frac{40,1 + 41,6 + 48,1}{3,8} = 13,24$$

$$K_5 = \frac{55,3 + 57,17 + 42,01}{3,8} = 15,15$$

$$K_6 = \frac{116,1 + 42,5 + 58,6}{3,8} = 22,20$$

$$\Delta K = 13,05 + 19,26 + 10,47 + 13,24 + 15,15 + 22,20 = 93,35$$

$$0 \leq K \leq 1$$

~~Эксперттің көз жолымен оқу жасауға~~
~~тапсырма~~

Уақыт Ойлаушының көз жолымен оқу жасауға
және қолданылатын

$$1) k = 1 - \frac{m}{1,51} \cdot \frac{m}{0,80} = 1 - \frac{m}{1,51} \cdot \frac{m}{0,80} = 1 - \frac{0,80}{1,51} = 1 - 0,53 = 0,47$$

$$1) k = 1 - \frac{m}{1,51 + 1,03 + 1,38} \cdot \frac{m}{0,80 + 0,30 + 0,68} = 1 - \frac{m}{3,92} \cdot \frac{m}{1,78} = 1 - \frac{1,78}{3,92} = 1 - 0,45 = 0,55$$

$$2) k = 1 - \frac{m}{0,96 + 1,31 + 1,07} \cdot \frac{m}{5,20 + 0,58 + 0,30} = 1 - \frac{m}{3,34} \cdot \frac{m}{6,08} = 1 - \frac{1,08}{3,34} = 1 - 0,32 = 0,68$$

$$3) k = 1 - \frac{m}{1,25 + 1,65 + 1,54} \cdot \frac{m}{0,48 + 0,84 + 0,78} = 1 - \frac{m}{4,44} \cdot \frac{m}{2,1} = 1 - \frac{2,1}{4,44} = 1 - 0,47 = 0,53$$

$$4) k = 1 - \frac{m}{1,73 + 1,72 + 1,54} \cdot \frac{m}{0,94 + 0,88 + 0,70} = 1 - \frac{m}{4,99} \cdot \frac{m}{2,52} = 1 - \frac{2,52}{4,99} = 1 - 0,50 = 0,50$$

$$= \frac{\pi}{4,99} \cdot \frac{2,5}{\pi} = 1 - 0,5 = 0,5$$

$$5) k = 1 - \frac{\pi}{1,51 + 1,58 + 1,83} = 1 - \frac{\pi}{5,92} = 1 - 0,52 = 0,48$$

$$= 1 - \frac{\pi}{4,92} \cdot \frac{2,3}{\pi} = 1 - 0,46 = 0,54$$

$$6) k = 1 - \frac{\pi}{1,00 + 1,89 + 1,54} = 1 - \frac{\pi}{5,11} = 1 - 0,98 = 0,02$$

$$= 1 - \frac{\pi}{4,43} \cdot \frac{1,73}{\pi} = 1 - \frac{\pi}{4,43} \cdot \frac{1,73}{\pi} = 0,61$$

	1	2	3	4	5	6
k	0,45	0,68	0,54	0,5	0,54	0,61