

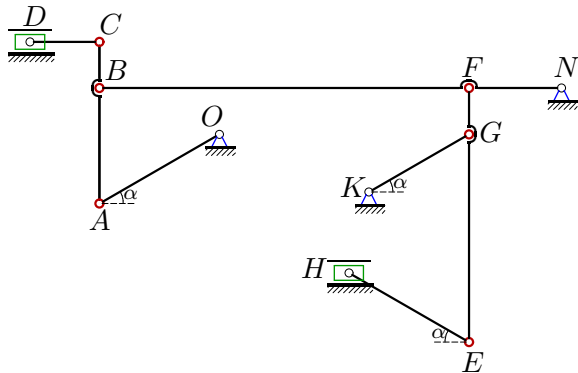
Кинематический анализ механизма (7 звеньев)

Плоский многозвенный механизм с одной степенью свободы приводится в движение кривошипом, который вращается против часовой стрелки с постоянной угловой скоростью. Найти скорости всех шарниров. Размеры даны в сантиметрах.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.158.)

Задача К-9.1.

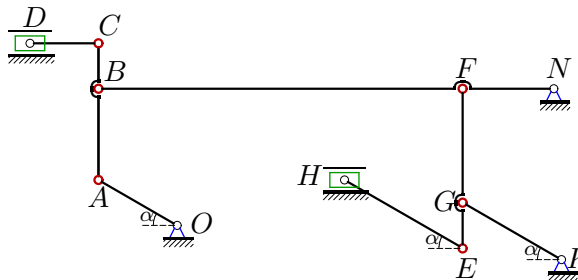
Карабанов Илья



$$\begin{aligned} \omega_{OA} &= 3 \text{ рад/с}, \alpha = 30^\circ, \\ AB &= 25, BC = 10, \\ BF &= 80, NF = 20, \\ CD &= 15, EH = 30, \\ FG &= 10, GE = 45, \\ OA &= 30, KG = 25. \end{aligned}$$

Задача К-9.2.

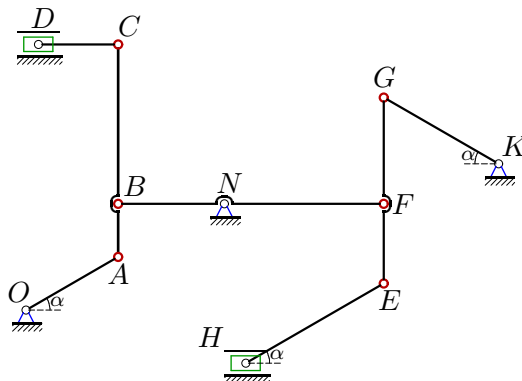
Тулегенов Азамат



$$\begin{aligned} \omega_{OA} &= 1 \text{ рад/с}, \alpha = 30^\circ, \\ AB &= 20, BC = 10, \\ BF &= 80, NF = 20, \\ CD &= 15, EH = 30, \\ FG &= 25, GE = 10, \\ OA &= 20, KG = 25. \end{aligned}$$

Задача К-9.3.

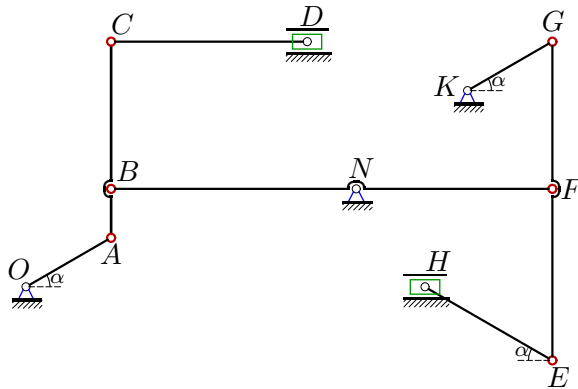
Рахматулина Анна



$$\begin{aligned} \omega_{OA} &= 4 \text{ рад/с}, \alpha = 30^\circ, \\ AB &= 10, BC = 30, \\ NB &= 20, NF = 30, \\ CD &= 15, EH = 30, \\ FE &= 15, FG = 20, \\ OA &= 20, KG = 25. \end{aligned}$$

Задача К-9.4.

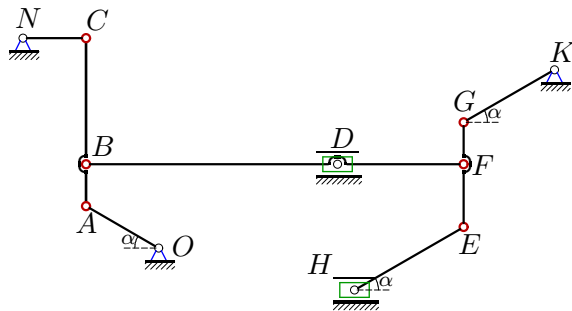
Смирнова Анастасия



$\omega_{OA} = 4$ рад/с, $\alpha = 30^\circ$,
 $AB = 10$, $BC = 30$,
 $NB = 50$, $NF = 40$,
 $CD = 40$, $EH = 30$,
 $FE = 35$, $FG = 30$,
 $OA = 20$, $KG = 20$.

Задача К-9.5.

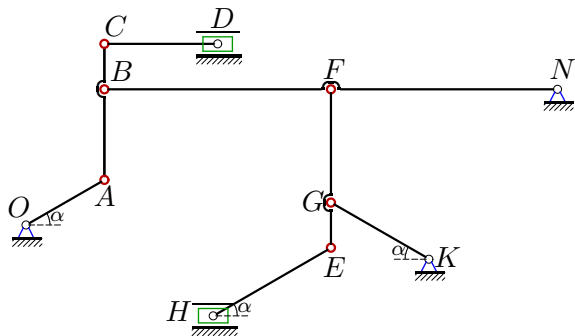
Хлапонина Яна



$\omega_{NC} = 3$ рад/с, $\alpha = 30^\circ$,
 $AB = 10$, $BC = 30$,
 $DB = 60$, $DF = 30$,
 $NC = 15$, $EH = 30$,
 $FE = 15$, $FG = 10$,
 $OA = 20$, $KG = 25$.

Задача К-9.6.

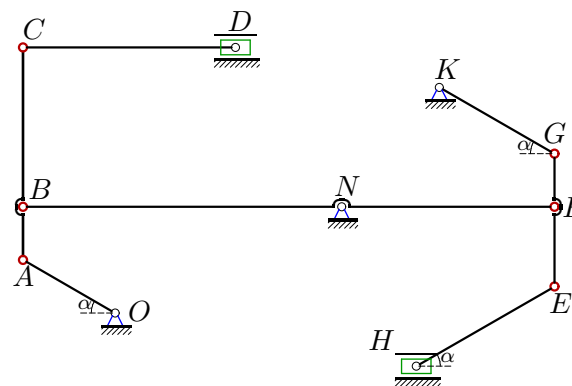
Бабкина Мария



$\omega_{KG} = 2$ рад/с, $\alpha = 30^\circ$,
 $AB = 20$, $BC = 10$,
 $BF = 50$, $NF = 50$,
 $CD = 25$, $EH = 30$,
 $FG = 25$, $GE = 10$,
 $OA = 20$, $KG = 25$.

Задача К-9.7.

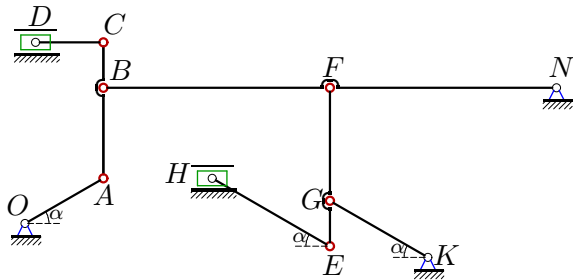
Власов Максим



$\omega_{KG} = 2$ рад/с, $\alpha = 30^\circ$,
 $AB = 10$, $BC = 30$,
 $NB = 60$, $NF = 40$,
 $CD = 40$, $EH = 30$,
 $FE = 15$, $FG = 10$,
 $OA = 20$, $KG = 25$.

Задача К-9.12.

Апсуваева Фатимат



$$\omega_{NB} = 2 \text{ рад/с}, \alpha = 30^\circ,$$

$$AB = 20, BC = 10,$$

$$BF = 50, NF = 50,$$

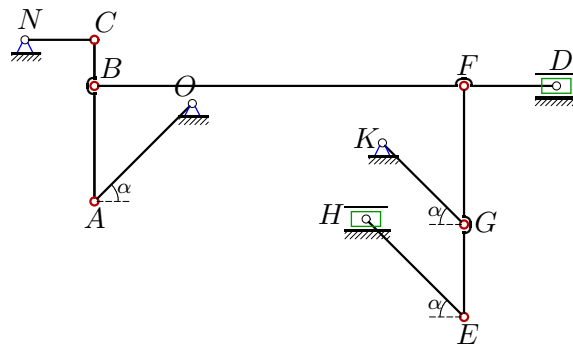
$$CD = 15, EH = 30,$$

$$FG = 25, GE = 10,$$

$$OA = 20, KG = 25.$$

Задача К-9.13.

Мишкина Даша



$$\omega_{OA} = 2 \text{ рад/с}, \alpha = 45^\circ,$$

$$AB = 25, BC = 10,$$

$$BF = 80, FD = 20,$$

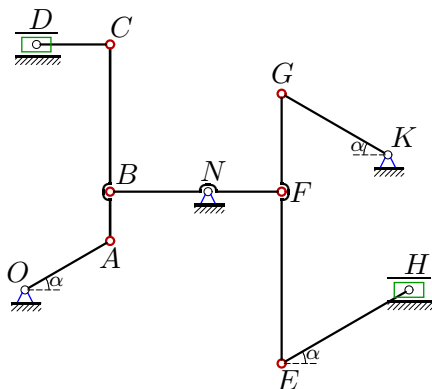
$$NC = 15, EH = 30,$$

$$FE = 50, FG = 30,$$

$$OA = 30, KG = 25.$$

Задача К-9.14.

Кульчицкая Елена



$$\omega_{OA} = 1 \text{ рад/с}, \alpha = 30^\circ,$$

$$AB = 10, BC = 30,$$

$$NB = 20, NF = 15,$$

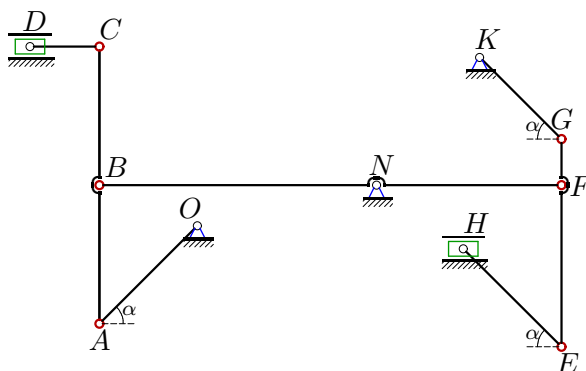
$$CD = 15, EH = 30,$$

$$FE = 35, FG = 20,$$

$$OA = 20, KG = 25.$$

Задача К-9.15.

Демченко Ян



$$\omega_{BF} = 4 \text{ рад/с}, \alpha = 45^\circ,$$

$$AB = 30, BC = 30,$$

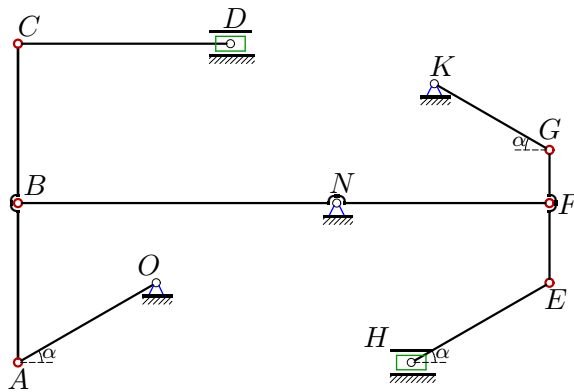
$$NB = 60, NF = 40,$$

$$CD = 15, EH = 30,$$

$$FE = 35, FG = 10,$$

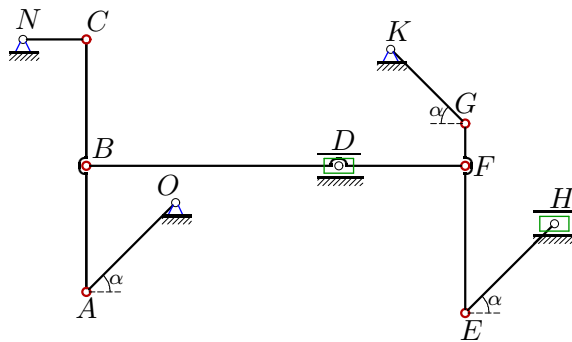
$$OA = 30, KG = 25.$$

Задача К-9.16.



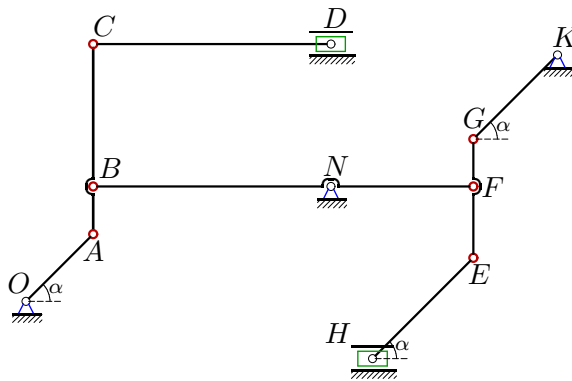
$\omega_{BF} = 3$ рад/с, $\alpha = 30^\circ$,
 $AB = 30$, $BC = 30$,
 $NB = 60$, $NF = 40$,
 $CD = 40$, $EH = 30$,
 $FE = 15$, $FG = 10$,
 $OA = 30$, $KG = 25$.

Задача К-9.17.



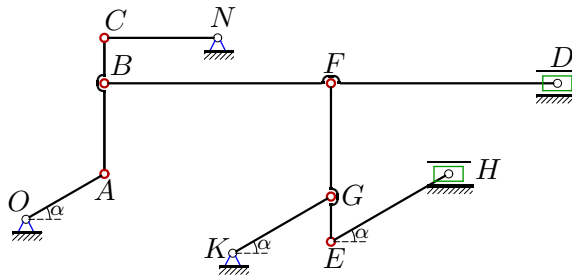
$\omega_{OA} = 4$ рад/с, $\alpha = 45^\circ$,
 $AB = 30$, $BC = 30$,
 $DB = 60$, $DF = 30$,
 $NC = 15$, $EH = 30$,
 $FE = 35$, $FG = 10$,
 $OA = 30$, $KG = 25$.

Задача К-9.18.



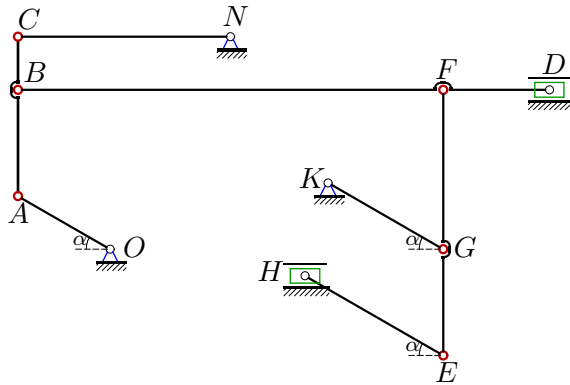
$\omega_{OA} = 4$ рад/с, $\alpha = 45^\circ$,
 $AB = 10$, $BC = 30$,
 $NB = 50$, $NF = 30$,
 $CD = 50$, $EH = 30$,
 $FE = 15$, $FG = 10$,
 $OA = 20$, $KG = 25$.

Задача К-9.19.



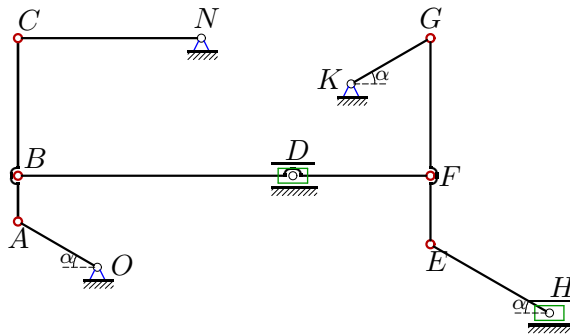
$\omega_{OA} = 2$ рад/с, $\alpha = 30^\circ$,
 $AB = 20$, $BC = 10$,
 $BF = 50$, $FD = 50$,
 $NC = 25$, $EH = 30$,
 $FE = 35$, $FG = 25$,
 $OA = 20$, $KG = 25$.

Задача К-9.20.



$\omega_{OA} = 4 \text{ рад/с}, \alpha = 30^\circ,$
 $AB = 20, BC = 10,$
 $BF = 80, FD = 20,$
 $NC = 40, EH = 30,$
 $FE = 50, FG = 30,$
 $OA = 20, KG = 25.$

Задача К-9.21.



$\omega_{NC} = 4 \text{ рад/с}, \alpha = 30^\circ,$
 $AB = 10, BC = 30,$
 $DB = 60, DF = 30,$
 $NC = 40, EH = 30,$
 $FE = 15, FG = 30,$
 $OA = 20, KG = 20.$

К-9

Ответы.

Кинематический анализ механизма (7 звеньев)

16-Oct-16

№	v_A	v_B	v_C	v_D	v_E	v_F	v_G	v_H	
1	90.000	77.942	79.994	18.000	51.897	15.588	18.000	58.500	Карабанов Илья
2	20.000	17.321	18.028	5.000	4.454	3.464	4.000	0.800	Тулегенов Азамат
3	80.000	69.282	138.564	120.000	113.248	103.923	120.000	15.000	Рахматулина Анна
4	80.000	69.282	138.564	120.000	66.826	55.426	64.000	5.333	Смирнова Анастасия
5	51.962	49.038	45.000	19.486	36.886	29.765	25.981	16.238	Хлапоница Яна
6	100.000	86.603	90.139	25.000	55.678	43.301	50.000	60.000	Бабкина Мария
7	75.000	64.952	129.904	112.500	57.282	43.301	50.000	12.500	Власов Максим
8	30.000	25.981	30.000	15.000	15.662	12.990	15.000	16.250	Мурманцев Никита
9	60.000	51.962	54.083	15.000	23.970	10.392	12.000	15.600	Кананыхина Екатерина
10	120.000	94.868	84.853	42.426	72.498	49.477	36.000	93.338	Васильев Иван
11	41.667	36.084	72.169	62.500	48.814	21.651	25.000	31.250	Янаев Андрей
12	230.940	200.000	208.167	57.735	128.582	100.000	115.470	23.094	Апсуваева Фатимат
13	60.000	44.124	42.426	12.122	23.788	14.797	12.000	13.738	Мишкина Даша
14	20.000	17.321	34.641	30.000	18.467	12.990	15.000	5.625	Кульчицкая Елена
15	339.411	240.000	339.411	240.000	582.409	160.000	226.274	720.000	Демченко Ян
16	207.846	180.000	207.846	103.923	158.745	120.000	138.564	34.641	
17	120.000	94.868	84.853	42.426	60.000	60.000	60.000	84.853	
18	80.000	56.569	178.885	169.706	61.188	33.941	48.000	84.853	
19	40.000	35.277	34.641	6.667	20.699	18.559	20.000	1.333	
20	80.000	70.553	69.282	13.333	14.552	19.230	16.000	3.556	
21	184.752	174.356	160.000	69.282	113.725	105.830	92.376	127.017	

К-9 файл 9kDs-AnsA

№	ω_{OA}	ω_{CA}	ω_{CD}	ω_{BF}	ω_{FE}	ω_{KG}	ω_{EH}	ω_{NC}	a_A	a_B	a_C	a_E	a_F	a_G
1	3.000	1.800	-5.196	0.779	0.900	-0.720	-0.600	-	2.700	0.813	0.232	-	-	-
2	1.000	-0.500	-1.155	0.173	-0.080	0.160	-0.133	-	0.200	0.153	0.180	-	-	-
3	4.000	-4.000	4.619	-3.464	3.000	4.800	-4.000	-	3.200	4.000	19.619	-	-	-
4	4.000	-4.000	-1.732	-1.386	-1.067	-3.200	-2.133	-	3.200	3.341	14.550	-	-	-
5	-2.598	0.650	-	-0.750	0.650	1.039	-0.866	3.000	1.665	0.914	1.350	-	-	-
6	-5.000	2.500	3.464	0.866	-1.000	2.000	-1.667	-	-	-	-	1.135	0.839	1.000
7	3.750	-3.750	1.624	1.083	-2.500	2.000	1.667	-	-	-	-	2.066	1.219	1.000
8	1.000	0.500	0.650	0.433	0.250	0.750	-0.500	-	0.300	0.135	0.035	-	-	-
9	3.000	-1.500	1.299	0.520	0.600	-0.480	-0.400	-	1.800	1.377	1.619	-	-	-
10	4.000	1.414	-	-1.697	1.697	1.440	1.200	-1.697	4.800	2.960	2.624	-	-	-
11	-2.083	2.083	0.902	0.722	-1.250	1.000	-0.833	-	-	-	-	0.830	0.322	0.250
12	-11.547	5.774	-13.333	2.000	-2.309	4.619	-3.849	-	35.277	4.000	23.558	-	-	-
13	2.000	1.212	-	0.424	-0.687	-0.480	-0.400	-2.828	1.200	0.781	1.246	-	-	-
14	1.000	-1.000	1.155	-0.866	0.375	0.600	0.500	-	0.200	0.250	1.226	-	-	-
15	11.314	8.000	-16.000	4.000	-16.000	9.051	7.542	-	40.013	9.600	24.933	-	-	-
16	6.928	3.464	4.500	3.000	-6.928	5.543	4.619	-	14.988	5.400	5.198	-	-	-
17	4.000	1.414	-	1.414	-0.000	2.400	-2.000	-5.657	4.800	2.881	5.278	-	-	-
18	4.000	-5.657	-1.131	-1.131	-3.394	1.920	-1.600	-	3.200	5.500	17.728	-	-	-
19	2.000	-0.667	-	-0.346	-0.133	0.800	-0.667	-1.386	0.800	0.497	0.718	-	-	-
20	4.000	-1.333	-	0.693	0.178	-0.640	-0.533	1.732	3.200	2.607	2.448	-	-	-
21	9.238	-2.309	-	2.667	-0.770	4.619	-3.079	4.000	21.047	17.378	6.400	-	-	-