

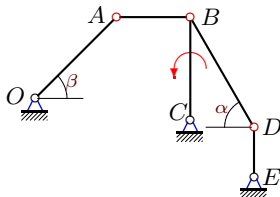
Уравнение трех угловых ускорений

Многозвенный механизм приводится в движение кривошипом OA или BC , вращающимся с известной угловой скоростью и известным угловым ускорением. Найти угловые скорости и угловые ускорения звеньев механизма. Длины звеньев даны в см, угловые скорости — в рад/с, угловые ускорения — в рад/с². Стержни, положение которых не определено углом, вертикальны или горизонтальны.

Кирсанов М.Н. Решебник. Теоретическая механика с. 183.

Вариант 1

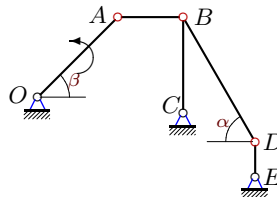
K19.



$\omega_{BC}=3$, $\varepsilon_{BC}=4$, $\alpha=60^\circ$, $\beta=45^\circ$,
 $OA=28$, $AB=18$, $BC=25$, $BD=31$,
 $DE=12$.

Вариант 2

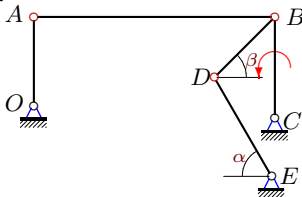
K19.



$\omega_{OA}=4$, $\varepsilon_{OA}=3$, $\alpha=60^\circ$, $\beta=45^\circ$,
 $OA=26$, $AB=15$, $BC=22$, $BD=33$,
 $DE=8$.

Вариант 3

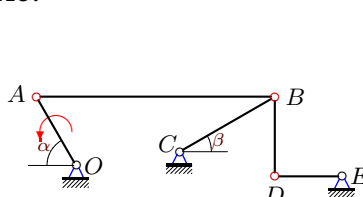
K19.



$\omega_{BC}=4$, $\varepsilon_{BC}=4$, $\alpha=60^\circ$, $\beta=45^\circ$,
 $OA=28$, $AB=76$, $BC=32$, $BD=27$,
 $DE=36$.

Вариант 4

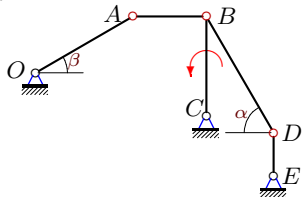
K19.



$\omega_{OA}=2$, $\varepsilon_{OA}=3$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=26$, $AB=78$, $BC=36$, $BD=26$,
 $DE=22$.

Вариант 5

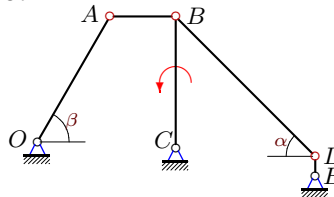
K19.



$\omega_{BC}=3$, $\varepsilon_{BC}=3$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=26$, $AB=17$, $BC=23$, $BD=31$,
 $DE=10$.

Вариант 6

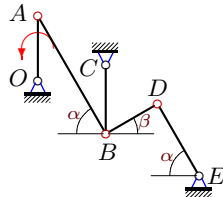
K19.



$\omega_{BC}=2$, $\varepsilon_{BC}=1$, $\alpha=45^\circ$, $\beta=60^\circ$,
 $OA=22$, $AB=10$, $BC=20$, $BD=30$,
 $DE=3$.

Вариант 7

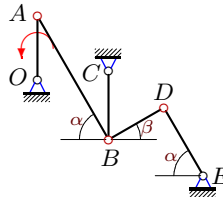
K19.



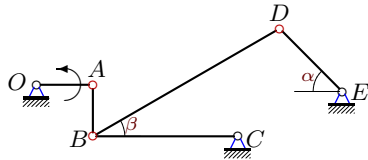
$\omega_{OA}=2$, $\varepsilon_{OA}=4$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=28$, $AB=59$, $BC=30$, $BD=26$,
 $DE=36$.

Вариант 8

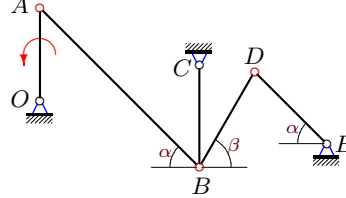
K19.



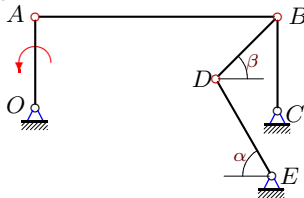
$\omega_{OA}=2$, $\varepsilon_{OA}=3$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=26$, $AB=58$, $BC=28$, $BD=26$,
 $DE=32$.

Вариант 9**K19.**

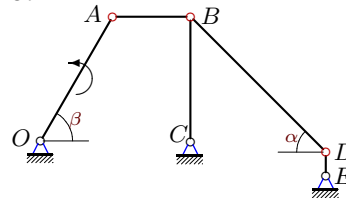
$\omega_{OA}=1, \varepsilon_{OA}=1, \alpha=45^\circ, \beta=30^\circ,$
 $OA=12, AB=11, BC=31, BD=46,$
 $DE=19.$

Вариант 10**K19.**

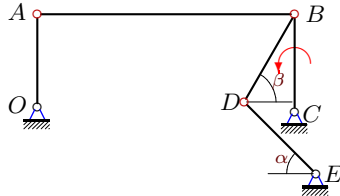
$\omega_{OA}=2, \varepsilon_{OA}=1, \alpha=45^\circ, \beta=60^\circ,$
 $OA=22, AB=53, BC=24, BD=26,$
 $DE=24.$

Вариант 11**K19.**

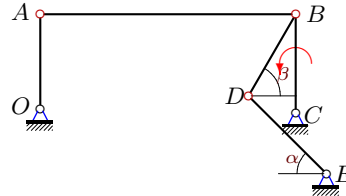
$\omega_{OA}=1, \varepsilon_{OA}=3, \alpha=60^\circ, \beta=45^\circ,$
 $OA=26, AB=69, BC=27, BD=25,$
 $DE=32.$

Вариант 12**K19.**

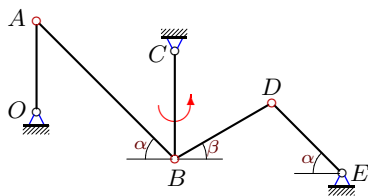
$\omega_{OA}=3, \varepsilon_{OA}=2, \alpha=45^\circ, \beta=60^\circ,$
 $OA=24, AB=13, BC=21, BD=32,$
 $DE=4.$

Вариант 13**K19.**

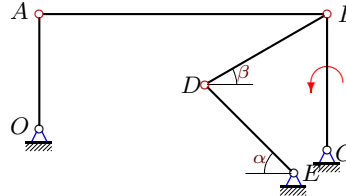
$\omega_{BC}=1, \varepsilon_{BC}=1, \alpha=45^\circ, \beta=60^\circ,$
 $OA=22, AB=61, BC=23, BD=24,$
 $DE=24.$

Вариант 14**K19.**

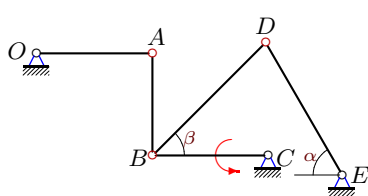
$\omega_{BC}=1, \varepsilon_{BC}=2, \alpha=45^\circ, \beta=60^\circ,$
 $OA=24, AB=65, BC=25, BD=24,$
 $DE=28.$

Вариант 15**K19.**

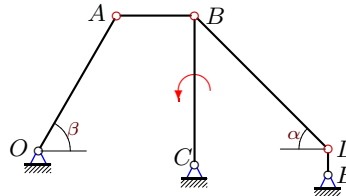
$\omega_{BC}=4, \varepsilon_{BC}=1, \alpha=45^\circ, \beta=30^\circ,$
 $OA=22, AB=47, BC=26, BD=27,$
 $DE=24.$

Вариант 16**K19.**

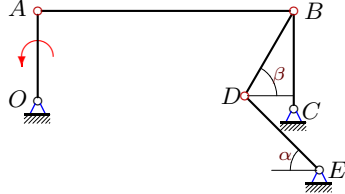
$\omega_{BC}=4, \varepsilon_{BC}=1, \alpha=45^\circ, \beta=30^\circ,$
 $OA=22, AB=55, BC=26, BD=27,$
 $DE=24.$

Вариант 17**K19.**

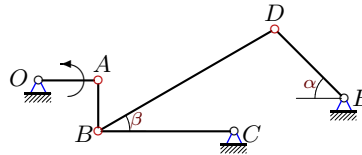
$\omega_{BC}=2, \varepsilon_{BC}=3, \alpha=60^\circ, \beta=45^\circ,$
 $OA=34, AB=30, BC=34, BD=47,$
 $DE=45.$

Вариант 18**K19.**

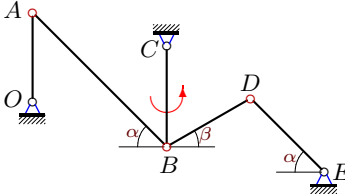
$\omega_{BC}=1, \varepsilon_{BC}=2, \alpha=45^\circ, \beta=60^\circ,$
 $OA=24, AB=12, BC=23, BD=29,$
 $DE=4.$

Вариант 19**K19.**

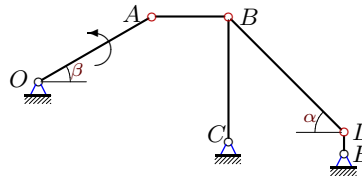
$\omega_{OA}=2, \varepsilon_{OA}=2, \alpha=45^\circ, \beta=60^\circ,$
 $OA=24, AB=68, BC=26, BD=26,$
 $DE=28.$

Вариант 20**K19.**

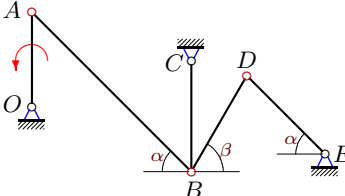
$\omega_{OA}=3, \varepsilon_{OA}=2, \alpha=45^\circ, \beta=30^\circ,$
 $OA=14, AB=12, BC=32, BD=48,$
 $DE=23.$

Вариант 21**K19.**

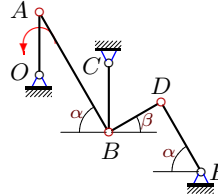
$\omega_{BC}=3, \varepsilon_{BC}=2, \alpha=45^\circ, \beta=30^\circ,$
 $OA=24, AB=51, BC=27, BD=26,$
 $DE=28.$

Вариант 22**K19.**

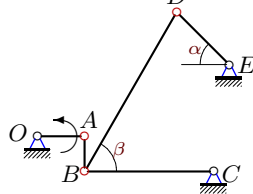
$\omega_{OA}=1, \varepsilon_{OA}=2, \alpha=45^\circ, \beta=30^\circ,$
 $OA=24, AB=14, BC=23, BD=30,$
 $DE=4.$

Вариант 23**K19.**

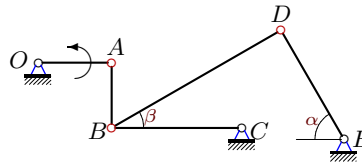
$\omega_{OA}=4, \varepsilon_{OA}=2, \alpha=45^\circ, \beta=60^\circ,$
 $OA=24, AB=57, BC=28, BD=28,$
 $DE=28.$

Вариант 24**K19.**

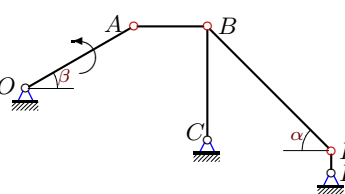
$\omega_{OA}=3, \varepsilon_{OA}=4, \alpha=60^\circ, \beta=30^\circ,$
 $OA=28, AB=62, BC=31, BD=27,$
 $DE=36.$

Вариант 25**K19.**

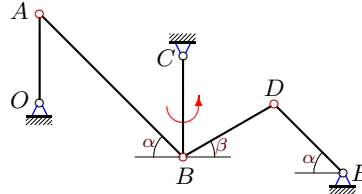
$\omega_{OA}=2, \varepsilon_{OA}=1, \alpha=45^\circ, \beta=60^\circ,$
 $OA=12, AB=9, BC=33, BD=47,$
 $DE=19.$

Вариант 26**K19.**

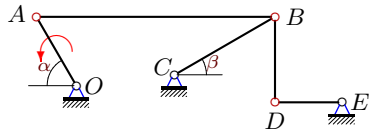
$\omega_{OA}=3, \varepsilon_{OA}=4, \alpha=60^\circ, \beta=30^\circ,$
 $OA=18, AB=16, BC=32, BD=48,$
 $DE=31.$

Вариант 27**K19.**

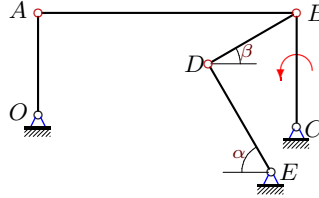
$\omega_{OA}=2, \varepsilon_{OA}=1, \alpha=45^\circ, \beta=30^\circ,$
 $OA=22, AB=13, BC=20, BD=31,$
 $DE=4.$

Вариант 28**K19.**

$\omega_{BC}=3, \varepsilon_{BC}=1, \alpha=45^\circ, \beta=30^\circ,$
 $OA=22, AB=50, BC=25, BD=26,$
 $DE=24.$

Вариант 29**K19.**

$\omega_{OA}=4$, $\varepsilon_{OA}=3$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=26$, $AB=78$, $BC=38$, $BD=28$,
 $DE=22$.

Вариант 30**K19.**

$\omega_{BC}=3$, $\varepsilon_{BC}=3$, $\alpha=60^\circ$, $\beta=30^\circ$,
 $OA=26$, $AB=66$, $BC=29$, $BD=26$,
 $DE=32$.

Ответы

	ω_{OA}	ω_{AB}	ω_{BC}	ω_{BD}	ω_{DE}	ε_{OA}	ε_{AB}	ε_{BC}	ε_{BD}	ε_{DE}
1	3.788	-4.167	3.000	0.000	6.250	-25.082	30.873	4.000	-15.726	43.516
2	4.000	-4.903	3.343	0.000	9.192	3.000	-0.454	32.266	-26.072	181.868
3	4.571	0.000	4.000	2.454	2.603	4.571	0.962	4.000	-3.582	6.523
4	2.000	1.333	2.502	1.732	-3.545	3.000	-0.699	-2.274	16.568	4.798
5	5.308	-7.030	3.000	0.000	6.900	-108.116	152.567	3.000	-17.361	53.509
6	2.099	-2.309	2.000	0.000	13.333	-4.294	5.122	1.000	-21.370	157.778
7	2.000	0.000	-1.867	-1.077	1.347	4.000	7.340	8.768	-0.936	-6.942
8	2.000	0.000	-1.857	-1.000	1.407	3.000	6.916	9.621	-0.473	-7.987
9	1.000	0.000	-0.387	-0.191	-0.327	1.000	1.513	-0.387	-0.173	-0.426
10	2.000	0.000	-1.833	-1.239	0.949	1.000	4.501	6.111	1.409	-4.697
11	1.000	0.000	0.963	0.538	0.595	3.000	0.014	2.889	1.264	2.028
12	3.000	-2.769	2.969	0.000	15.588	2.000	-1.699	11.870	-34.775	259.030
13	1.045	0.000	1.000	0.702	0.496	1.045	0.017	1.000	0.387	0.780
14	1.042	0.000	1.000	0.763	0.462	2.083	0.016	2.000	1.176	1.152
15	-4.727	0.000	4.000	2.820	-3.885	40.074	27.310	1.000	-26.595	3.361
16	4.727	0.000	4.000	2.820	3.885	1.182	1.375	1.000	1.186	4.728
17	-2.000	0.000	2.000	1.297	1.106	-3.000	9.067	3.000	2.682	0.938
18	1.107	-1.107	1.000	0.000	5.750	0.799	-0.595	2.000	-5.328	38.813
19	2.000	0.000	1.846	1.351	0.887	2.000	0.109	1.846	0.224	1.758
20	3.000	0.000	-1.313	-0.641	-0.945	2.000	15.094	-0.875	-0.139	-1.653
21	-3.375	0.000	3.000	2.281	-2.594	19.266	14.319	2.000	-14.215	0.581
22	1.000	-1.485	0.522	0.000	3.000	2.000	-2.559	3.289	-1.402	26.345
23	4.000	0.000	-3.429	-2.510	1.775	2.000	17.694	23.755	7.212	-17.158
24	3.000	0.000	-2.710	-1.556	2.021	4.000	15.471	23.184	0.564	-18.636
25	2.000	0.000	-0.727	-0.374	-1.133	1.000	7.273	-0.364	-0.414	-1.028
26	3.000	0.000	-1.688	-0.974	-0.871	4.000	15.820	-2.250	-0.840	-2.237
27	2.000	-2.931	1.100	0.000	5.500	1.000	0.057	9.945	-4.416	73.926
28	-3.409	0.000	3.000	2.112	-2.802	20.713	13.596	1.000	-14.328	1.318
29	4.000	2.667	4.740	3.217	-7.091	3.000	-7.578	-17.120	54.300	31.847
30	3.346	0.000	3.000	1.673	2.355	3.346	0.456	3.000	-0.197	4.158