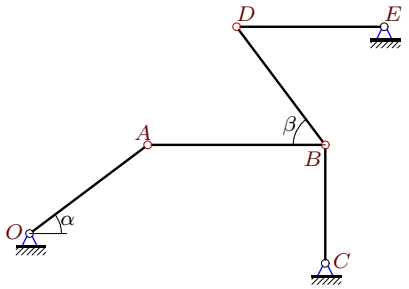
# Кинематический анализ механизма (5 звеньев)

В указанном положении механизма задана угловая скорость одного из его звеньев. Длины звеньев даны в сантиметрах. Стержни, направление которых не указано, считать вертикальными или горизонтальными. Найти угловые скорости звеньев механизма.

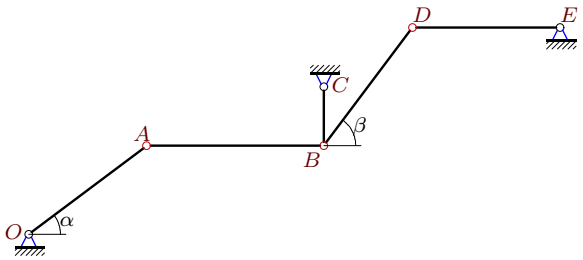
*Кирсанов М.Н.* **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2008.– 384 с. (с.158.)

**Задача 23.1.** 4



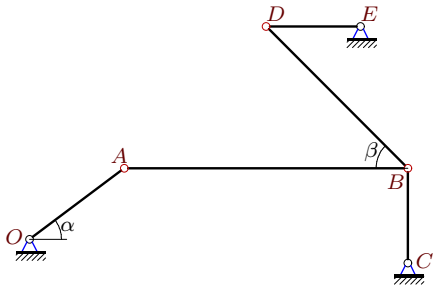

$\omega_{OA} = 60$ рад/с, $OA = 5$, $AB = 6$, $BC = 4$, $DE = 5$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

**Задача 23.2.** 4



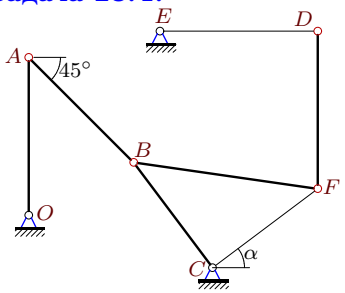

$\omega_{OA} = 60$ рад/с, $OA = 5$, $AB = 6$, $BC = 2$, $DE = 5$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

**Задача 23.3.** 4



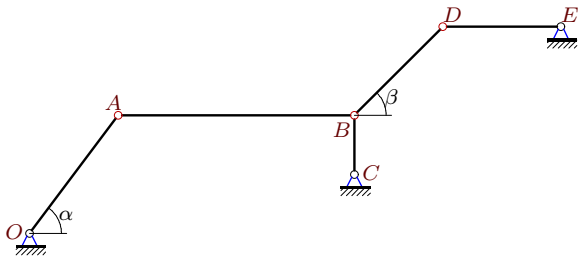

$\omega_{OA} = 12$ рад/с, $OA = 5$, $AB = 12$, $BC = 4$, $DE = 4$, $BD = 6\sqrt{2}$, $\cos\alpha = 0.8$, $\beta = 45°$.

**Задача 23.4.** 4



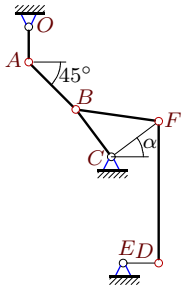

$\omega_{OA} = 2$ рад/с, $OA = 6$, $DF$=6, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=6, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.5.** 4



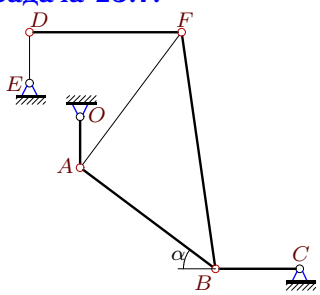

$\omega_{OA} = 24$ рад/с, $OA = 5$, $AB = 8$, $BC = 2$, $DE = 4$, $BD = 3\sqrt{2}$, $\cos\alpha = 0.6$, $\beta = 45°$.

**Задача 23.6.** 4



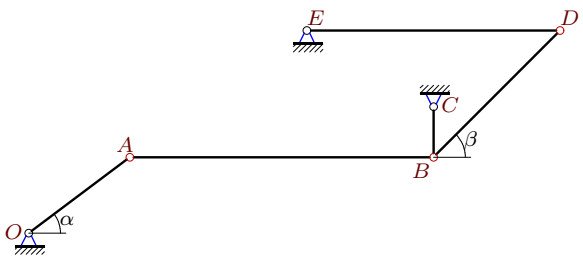

$\omega_{OA} = 4$ рад/с, $OA = 3$, $DF$=12, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=3, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.7.** 4



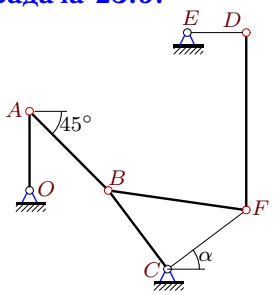

$\omega_{OA} = 30$ рад/с, $OA = 3$, $AB$=$AF$=10, $BC = 5$, $DF$=9, $DE$=3, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.8.** 4



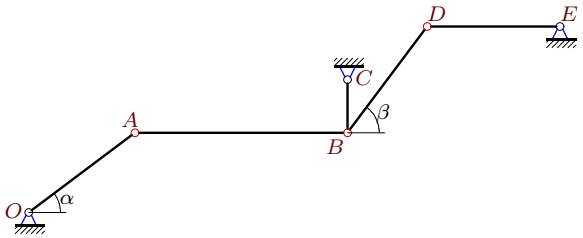

$\omega_{OA} = 30$ рад/с, $OA = 5$, $AB = 12$, $BC = 2$, $DE = 10$, $BD = 5\sqrt{2}$, $\cos\alpha = 0.8$, $\beta = 45°$.

**Задача 23.9.** 4



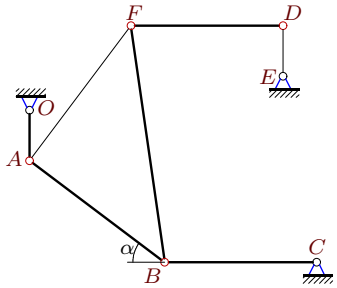

$\omega_{OA} = 3$ рад/с, $OA = 4$, $DF$=9, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=3, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.10.** 4



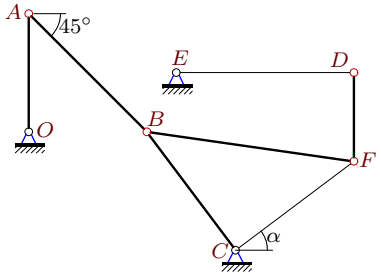

$\omega_{OA} = 20$ рад/с, $OA = 5$, $AB = 8$, $BC = 2$, $DE = 5$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

**Задача 23.11.** 4



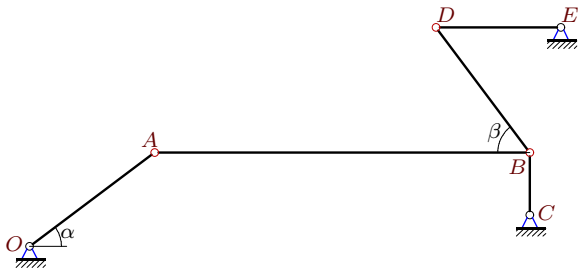

$\omega_{OA} = 18$ рад/с, $OA = 3$, $AB$=$AF$=10, $BC = 9$, $DF$=9, $DE$=3, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.12.** 4



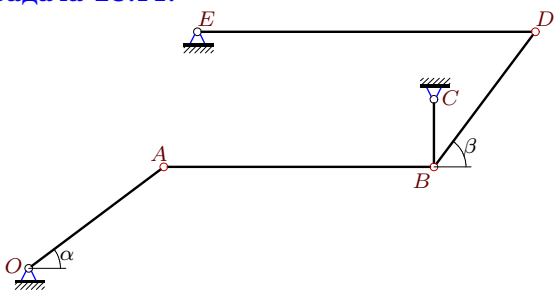

$\omega_{OA} = 3$ рад/с, $OA = 4$, $DF$=3, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=6, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.13.** 4



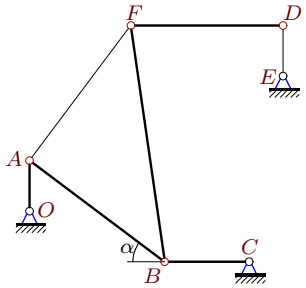

$\omega_{OA} = 48$ рад/с, $OA = 5$, $AB = 12$, $BC = 2$, $DE = 4$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

**Задача 23.14.** 4



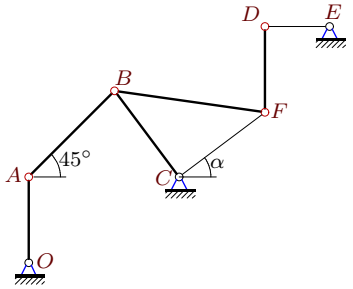

$\omega_{OA} = 40$ рад/с, $OA = 5$, $AB = 8$, $BC = 2$, $DE = 10$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

**Задача 23.15.** 4



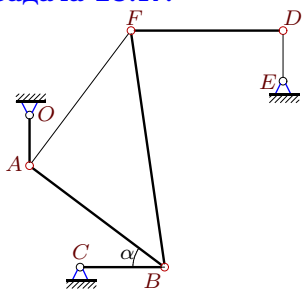

$\omega_{OA} = 30$ рад/с, $OA = 3$, $AB$=$AF$=10, $BC = 5$, $DF$=9, $DE$=3, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.16.** 4



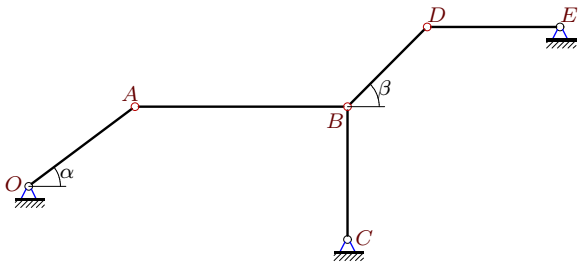

$\omega_{OA} = 21$ рад/с, $OA = 4$, $DF$=4, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=3, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.17.** 4



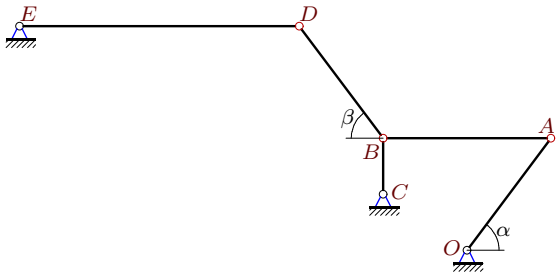

$\omega_{OA} = 30$ рад/с, $OA = 3$, $AB$=$AF$=10, $BC = 5$, $DF$=9, $DE$=3, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.18.** 4



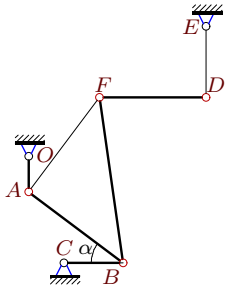

$\omega_{OA} = 10$ рад/с, $OA = 5$, $AB = 8$, $BC = 5$, $DE = 5$, $BD = 3\sqrt{2}$, $\cos\alpha = 0.8$, $\beta = 45°$.

**Задача 23.19.** 4



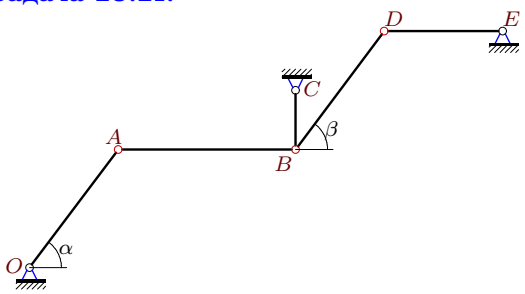

$\omega_{OA} = 10$ рад/с, $OA = 5$, $AB = 6$, $BC = 2$, $DE = 10$, $BD = 5$, $\cos\alpha = 0.6$, $\cos\beta = 0.6$.

**Задача 23.20.** 4



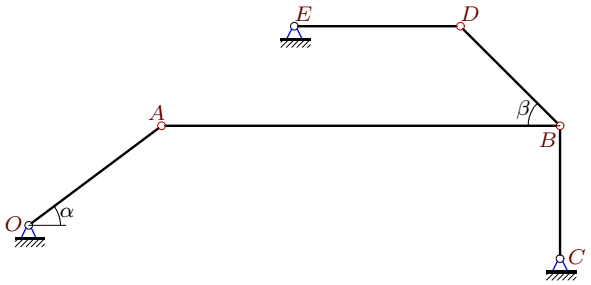

$\omega_{OA} = 30$ рад/с, $OA = 3$, $AB$=$AF$=10, $BC = 5$, $DF$=9, $DE$=6, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.21.** 4



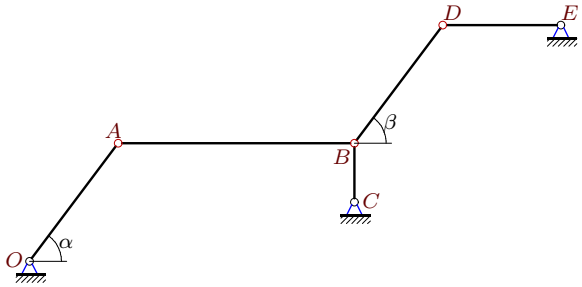

$\omega_{OA} = 4$ рад/с, $OA = 5$, $AB = 6$, $BC = 2$, $DE = 4$, $BD = 5$, $\cos\alpha = 0.6$, $\cos\beta = 0.6$.

**Задача 23.22.** 4



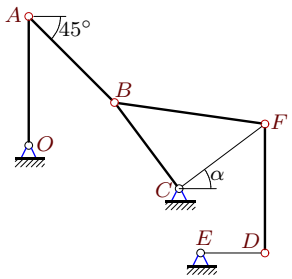

$\omega_{OA} = 60$ рад/с, $OA = 5$, $AB = 12$, $BC = 4$, $DE = 5$, $BD = 3\sqrt{2}$, $\cos\alpha = 0.8$, $\beta = 45°$.

**Задача 23.23.** 4



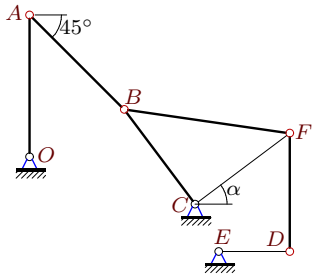

$\omega_{OA} = 8$ рад/с, $OA = 5$, $AB = 8$, $BC = 2$, $DE = 4$, $BD = 5$, $\cos\alpha = 0.6$, $\cos\beta = 0.6$.

**Задача 23.24.** 4



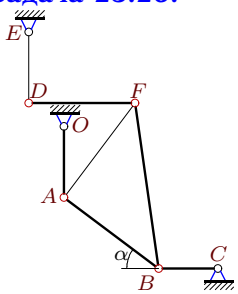

$\omega_{OA} = 2$ рад/с, $OA = 6$, $DF$=6, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=3, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.25.** 4



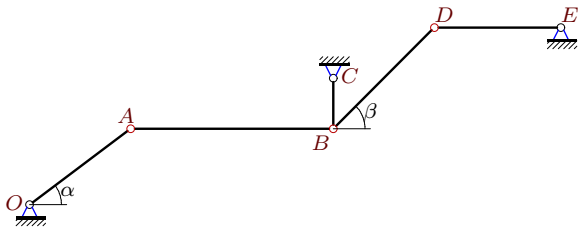

$\omega_{OA} = 10$ рад/с, $OA = 6$, $DF$=5, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=3, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.26.** 4



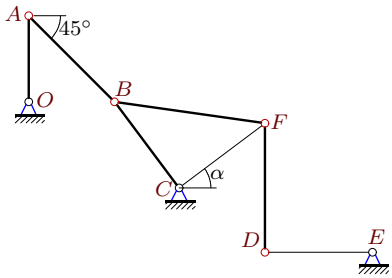

$\omega_{OA} = 15$ рад/с, $OA = 6$, $AB$=$AF$=10, $BC = 5$, $DF$=9, $DE$=6, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.27.** 4



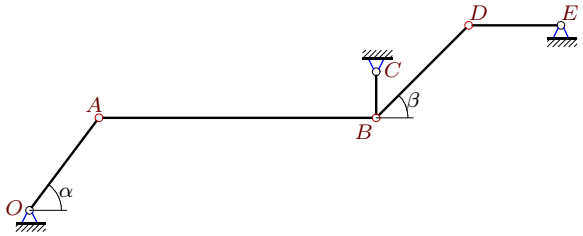

$\omega_{OA} = 20$ рад/с, $OA = 5$, $AB = 8$, $BC = 2$, $DE = 5$, $BD = 4\sqrt{2}$, $\cos\alpha = 0.8$, $\beta = 45°$.

**Задача 23.28.** 4



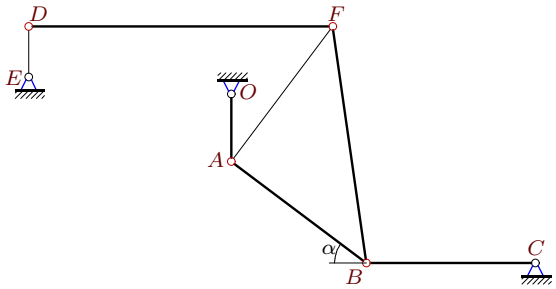

$\omega_{OA} = 5$ рад/с, $OA = 4$, $DF$=6, $BC$=$CF$=5, $AB = 4\sqrt{2}$, $DE$=5, $\cos\alpha$=0.8, $CB \perp CF$.

**Задача 23.29.** 4



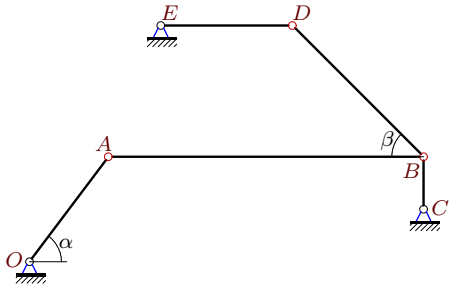

$\omega_{OA} = 4$ рад/с, $OA = 5$, $AB = 12$, $BC = 2$, $DE = 4$, $BD = 4\sqrt{2}$, $\cos\alpha = 0.6$, $\beta = 45°$.

**Задача 23.30.** 4



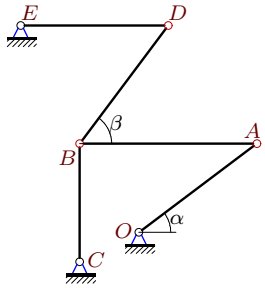

$\omega_{OA} = 45$ рад/с, $OA = 4$, $AB$=$AF$=10, $BC = 10$, $DF$=18, $DE$=3, $\cos\alpha$=0.8, $AB \perp AF$.

**Задача 23.31.** 4




$\omega_{OA} = 20$ рад/с, $OA = 5$, $AB = 12$, $BC = 2$, $DE = 5$, $BD = 5\sqrt{2}$, $\cos\alpha = 0.6$, $\beta = 45°$.

**Задача 23.32.** 4




$\omega_{OA} = 60$ рад/с, $OA = 5$, $AB = 6$, $BC = 4$, $DE = 5$, $BD = 5$, $\cos\alpha = 0.8$, $\cos\beta = 0.6$.

23.4

# Кинематический анализ механизма (5 звеньев)

| № | $\omega_{AB}$ | $\omega_{BC}$ | $\omega_{DB}$ | $\omega_{DF}$ | $\omega_{DE}$ |
|---|---|---|---|---|---|
| 1 | 40 | 45 | 45 | – | 27 |
| 2 | 40 | 90 | 45 | – | 27 |
| 3 | 4 | 9 | 6 | – | 9 |
| 4 | 9 | 12 | – | 6 | 8 |
| 5 | 9 | 48 | 32 | – | 24 |
| 6 | 9 | 12 | – | 3 | 16 |
| 7 | 15 | 24 | – | 10 | 70 |
| 8 | 10 | 45 | 18 | – | 9 |
| 9 | 9 | 12 | – | 4 | 16 |
| 10 | 10 | 30 | 15 | – | 9 |
| 11 | 9 | 8 | – | 6 | 42 |
| 12 | 9 | 12 | – | 12 | 8 |
| 13 | 16 | 72 | 36 | – | 27 |
| 14 | 20 | 60 | 30 | – | 9 |
| 15 | 15 | 24 | – | 10 | 70 |
| 16 | 9 | 12 | – | 9 | 16 |
| 17 | 15 | 24 | – | 10 | 70 |
| 18 | 5 | 6 | 10 | – | 6 |
| 19 | 5 | 20 | 10 | – | 3 |
| 20 | 15 | 24 | – | 10 | 35 |
| 21 | 2 | 8 | 4 | – | 3 |
| 22 | 20 | 45 | 60 | – | 36 |
| 23 | 3 | 16 | 8 | – | 6 |
| 24 | 9 | 12 | – | 6 | 16 |
| 25 | 45 | 60 | – | 36 | 80 |
| 26 | 15 | 24 | – | 10 | 35 |
| 27 | 10 | 30 | 15 | – | 12 |
| 28 | 15 | 20 | – | 10 | 16 |
| 29 | 1 | 8 | 4 | – | 4 |
| 30 | 30 | 24 | – | 10 | 140 |
| 31 | 5 | 40 | 16 | – | 16 |
| 32 | 40 | 45 | 45 | – | 27 |