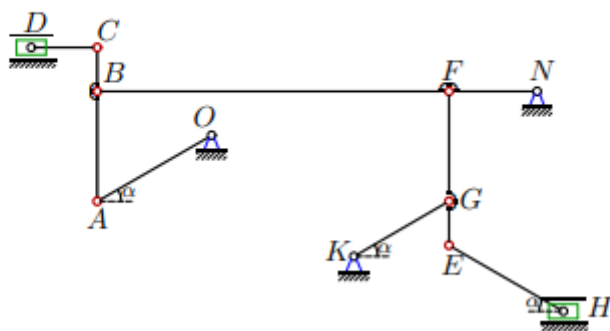
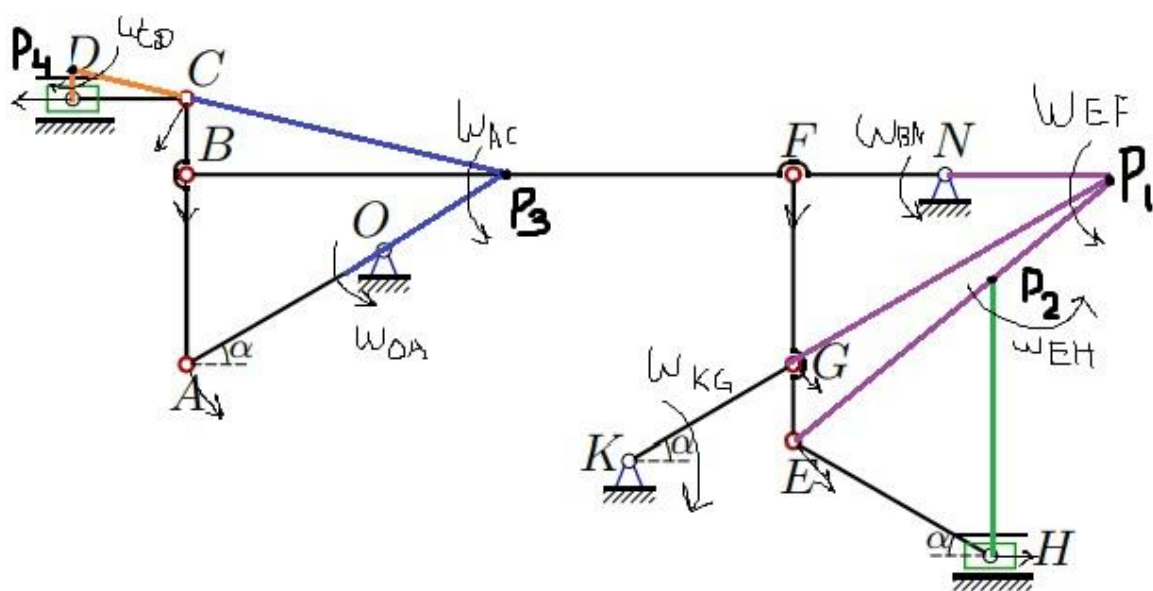


Задача 9.24.

Тышкин Павел Игоревич



$\omega_{OA} = 4 \text{ рад/с}$ ,  $\alpha = 30^\circ$ ,  
 $AB = 25$ ,  $BC = 10$ ,  
 $BF = 80$ ,  $NF = 20$ ,  
 $CD = 15$ ,  $EH = 30$ ,  
 $FG = 25$ ,  $GE = 10$ ,  
 $OA = 30$ ,  $KG = 25$ .



Найдем расстояния до МЦС всех тел через отношения сторон треугольников или через теорему Пифагора:

$$P_1E = \sqrt{P_1F^2 + (FG + GE)^2} = 55.678$$

$$P_2H = (FG + GE) \cdot \frac{EH \cdot \cos(a)}{P_1F} + EH \cdot \sin(a) = 36$$

$$P_2E = P_1E \cdot \frac{EH \cdot \cos(a)}{P_1F} = 33.407$$

$$P_3A = \frac{AB}{\sin(a)} = 50$$

$$P_3B = P_3A \cdot \cos(a) = 43.301$$

$$P_3C = \sqrt{BC^2 + P_3B^2} = 44.441$$

$$P_4D = BC \cdot \frac{CD}{P_3B} = 3.464$$

$$P_4C = \sqrt{CD^2 + P_4D^2} = 15.395$$

Теперь найдем все скорости в точках и угловые скорости тел:

$$V_A = w_{OA} \cdot OA = 120$$

$$w_{AC} = \frac{V_A}{P_3A} = 2.4$$

$$V_B = w_{AC} \cdot P_3B = 103.923$$

$$V_C = w_{AC} \cdot P_3C = 106.658$$

$$w_{CD} = \frac{V_C}{P_4C} = 6.928$$

$$V_D = w_{CD} \cdot P_4D = 24$$

$$w_{BN} = \frac{V_B}{BF + NF} = 1.039$$

$$V_F = w_{BN} \cdot NF = 20.785$$

$$w_{EF} = \frac{V_F}{P_1F} = 0.48$$

$$V_E = w_{EF} \cdot P_1E = 26.725$$

$$V_G = w_{EF} \cdot P_1G = 24$$

$$w_{EH} = \frac{V_E}{P_2E} = 0.8$$

$$V_H = w_{EH} \cdot P_2H = 28.8$$

$$w_{KG} = \frac{V_G}{KG} = 0.96$$

Ответы:

$$V_A = 120, V_B = 103.923, V_C = 106.658, V_D = 24$$

$$V_E = 26.725, V_F = 20.785, V_G = 24, V_H = 28.8$$

$$w_{OA} = 4, w_{AC} = 2.4, w_{CD} = 6.928, w_{BN} = 1.039$$

$$w_{EF} = 0.48, w_{KG} = 0.96, w_{EH} = 0.8$$