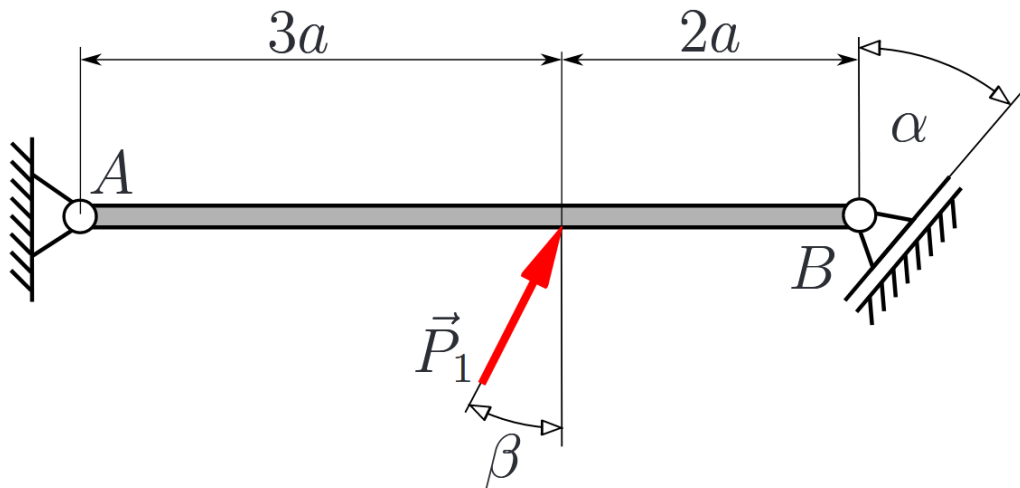
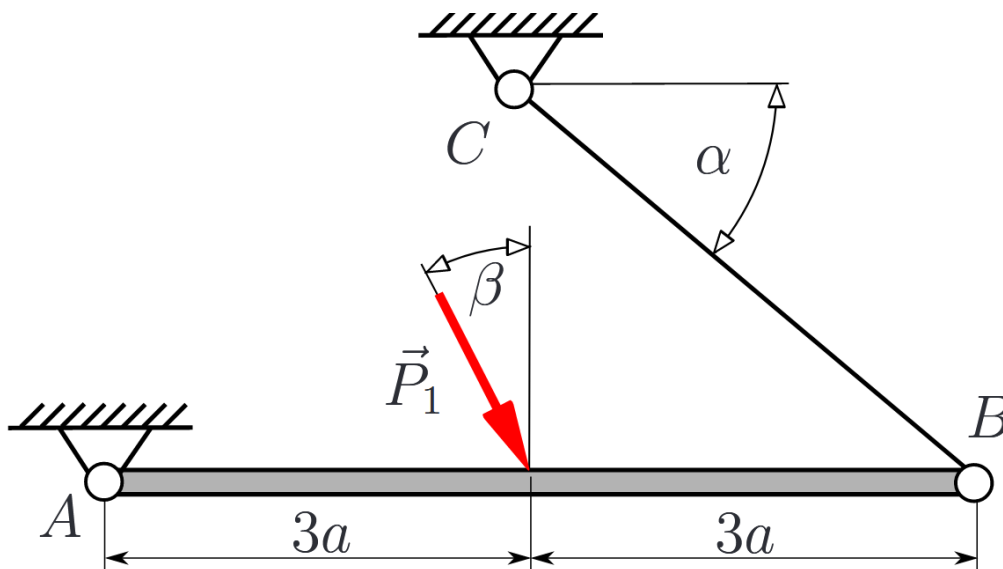


Theorem of three forces – problems

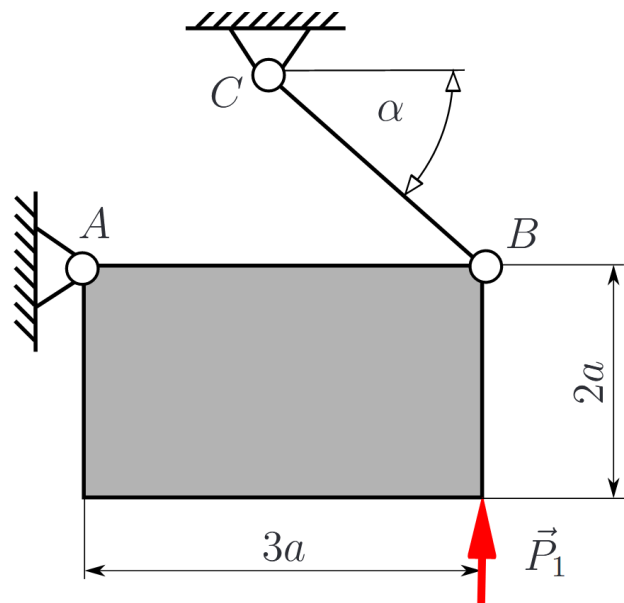
1. The AB rod is attached at the ends to the ground, as shown in the figure. Calculate the reactions at point A (R_A) and B (R_B) if the bar is in equilibrium under the influence of force P_1 . Data: $P_1 = 100$ [N], $\alpha = 45^\circ$, $\beta = 15^\circ$. Unknown: R_A , R_B .



2. The AB rod is attached to the ground at point A, and connected to the rope at point B as shown in the figure. Calculate the reaction at point A (R_A) and force in the rope (S_{BC}) if the bar is in equilibrium under the influence of force P_1 . Data: $P_1 = 140$ [N], $\alpha = 30^\circ$, $\beta = 15^\circ$. Unknown: R_A , S_{BC} .



3. Plate is attached to the ground at point A, and connected to the rope at point B as shown in the figure. Calculate the reaction at point A (R_A) and force in the rope (S_{BC}) if the plate is in equilibrium under the influence of force P_1 . Data: $P_1 = 40$ [N], $\alpha = 60^\circ$, $\beta = 30^\circ$. Unknown: R_A , S_{BC} .



4. A square plate with sides equal $3a$ is attached to the ground at point A, and B as shown in the figure. Calculate the reaction at point A (R_A) and B (R_B) if the plate is in equilibrium under the influence of force P_1 . Data: $P_1 = 400$ [N], $\alpha = 15^\circ$. Unknown: R_A , R_B .

