

Applied Mathematics APM01A1, 2017

May 8, 2017

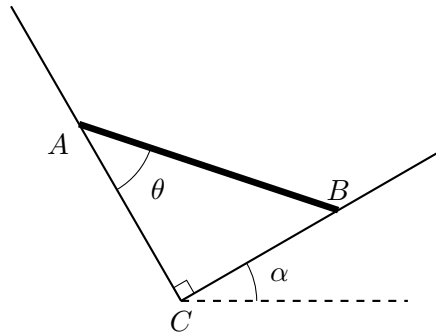
Tutorial 9

Question 1

A uniform ladder rests with one end on a horizontal floor and with the other against a vertical wall. The friction coefficients are $2/5$ and $1/2$ respectively. Calculate the angle of inclination of the ladder if it is about to start sliding.

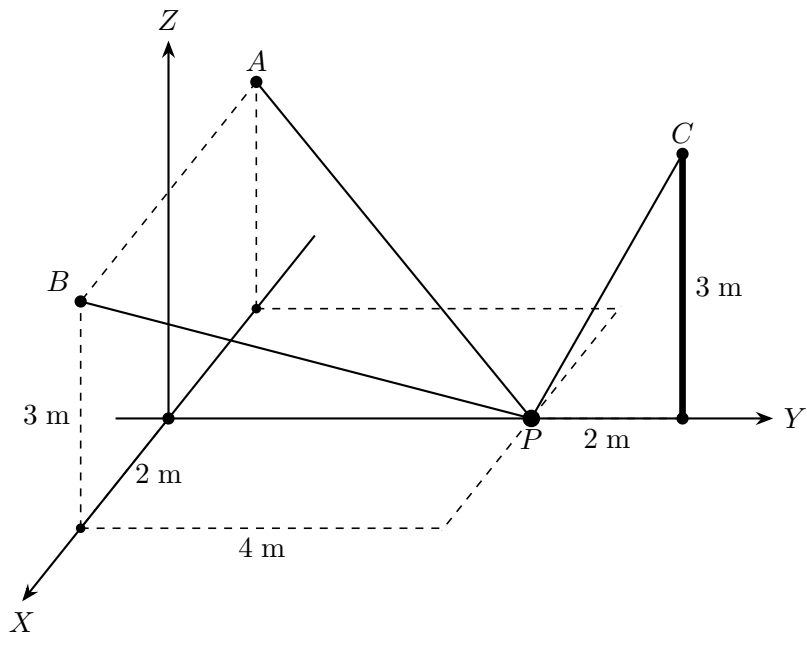
Question 2

In the figure below, a uniform rod AB lies in a vertical plane with its end points against the smooth surfaces CA and CB . Calculate the angle θ for equilibrium if $\alpha = 45^\circ$.



Question 3

A weight of 40 N is supported by three cables at point P as shown in the figure below. Calculate the tension in each of the cables



Question 4

A beam AD in the figure below is supported by a ball-and-socket joint at A and two cables, ECD and BD . Cable ECD moves over a frictionless pulley at point C . Calculate the forces in the cables and the reaction at A if a weight of mass W is attached to the beam at D .

