6. Car (7 p)

A car attempts driving over a road barrier, starting from rest, as shown in figure. The diameter of its wheel $d = 1\,\mathrm{m}$, coefficient of friction between the wheels and ground $\mu = 1$. The sketch is drawn using correct proportions, point C marks the position of the car's centre of mass. Determine the maximal height of those road barriers which can driven over with such a car, assuming that there is no drag in the non-driving axis (i.e. wheels rotate without friction), and the driving wheels are

1) front wheels;

2) rear axis.

3) Suppose that the car has four-wheel-drive, and the road barrier is substituted with a wall. Would it be possible to rise the front of the car by driving slowly against the wall?

