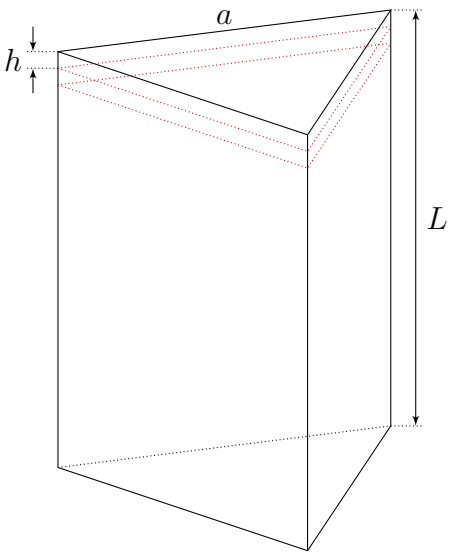
LPR Cup

11.s02.e04

Admit it: you don't believe in one reality anymore.
Inception (2010)

Thanks for not Cube

A body in the form of a regular triangular prism (side of the base triangle is equal to a) of height L consists of an even number of charged regular triangular prisms with height h. The bulk charge densities of the prisms alternate (ρ, $-\rho$, ρ, $-\rho$, etc.). Determine the axial component of the force F (along the prism axis), which acts from the body on a thin square plate (with a side b) uniformly charged with a charge q, if the center of the plate is placed at a height a from the upper edge of the prism on its axis and positioned so that the angle between the axis of the prism and the normal to the plate surface is equal to $\varphi = 30°$. It is known that: $h \ll a \ll b \ll L$.



First hint — 24.05.2021 14:00 (GMT+3)
Second hint — 26.05.2021 14:00 (GMT+3)

End of the fourth tour — 28.05.2021 22:00 (GMT+3)