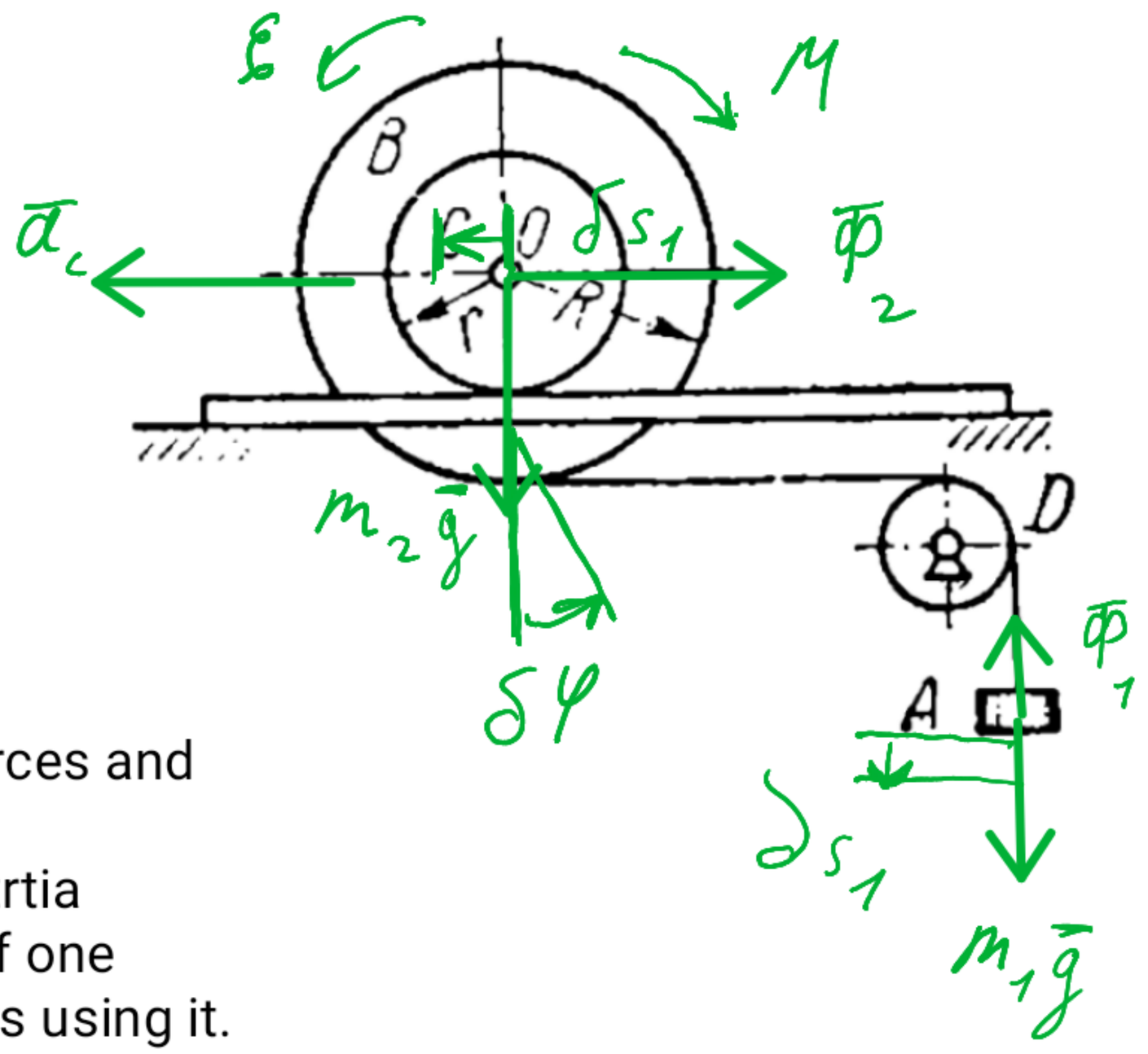
R.O.: system, consists of :
A - particle, rectlinear motion
D - body, rot. motion
B - disk, planar motion

Method: General equation of dynamics. It is most sutiable method for finding accelerations and making diff. equations of motion.



Algorithm:
1) To draw a picture with all active forces and reactions.
2) Define moments and forces of inetrtia
3) To declare a possible movement of one points of the system and derive others using it.
4) Write equation and solve the task.

$$\Sigma(F+\Phi)\cdot\delta r=0$$

Solution:

$$\Sigma A = m_1 g\,\delta s_1 - \Phi_1\delta s_1 - M\delta\varphi - \Phi_2\delta s_1 = 0$$

$$\Phi_1 = m a_1$$

$$\varepsilon = \frac{a_1}{R-r} \leftarrow a_c = \varepsilon\cdot r = \frac{a_1 r}{R-r} \quad \Big| \quad \delta\varphi = \frac{\delta s_1}{R-r}$$

$$\Phi_2 = m_2 a_c = m_2\frac{a_1 r}{R-r}$$

substitude

$$m_1 g\,\delta s_1 - m_1 a_1\delta s_1 - m_2\frac{r^2 a_1}{R-r}\cdot\frac{\delta s_1}{R-r} - \frac{m_2 a_1 r^2}{(R-r)^2}\delta s_1 = 0$$

$$\Rightarrow \boxed{a_1} = \dots$$