

$$4. n_0 = 180 \text{ об/мин} = 3 \text{ об/с}$$

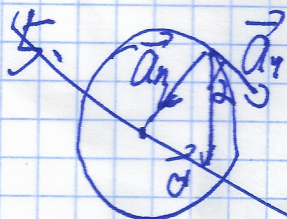
$$\varepsilon = 3 \text{ рад/с}^2$$

$$\omega_0 = 2\pi n_0 = 6\pi \text{ рад/с}$$

$$\text{время } t = \frac{\omega_0}{\varepsilon} = 2\pi \text{ с}$$

$$\Delta\varphi = \frac{\omega_0^2}{2\varepsilon} = \frac{36\pi^2}{6} = 6\pi^2$$

$$n = \frac{\Delta\varphi}{2\pi} = 3\pi \text{ об}$$



$$a_n = \frac{v^2}{r} \quad ①$$

$$a_t = \frac{dv}{dt} \quad ②$$

$$v = a_t t \quad ③$$

$$\text{из } ①, ②, ③, ④$$

$$\frac{4a_t^2}{r a_t} = \sqrt{3}$$

$$a_t = \frac{\sqrt{3}}{4} r$$

$$\tan \alpha = \frac{a_n}{a_t} \quad ⑤$$

$$a_n = a_t \tan \alpha$$

$$a_n = a_t \tan \alpha = \frac{3}{4} r$$