4.9

Dane

$m_b = 0{,}06\,kg$

$r = 6\,cm = 0{,}06\,m$

$M_t = 0{,}03\,N\cdot m$

$\varepsilon = 8\,\frac{rad}{s}$

$N_2 > N_1$ ← z zadania 4.8

$M_1 = N_1 \cdot r$

$M_2 = N_2 \cdot r$

$J = \frac{1}{2} m_b r^2$

$M_2 - M_1 - M_t = J \cdot \varepsilon$ – z drugiej zasady dynamiki dla ruchu obrotowego

$M_2 - M_1 = M_t = J \cdot \varepsilon$

$N_2 \cdot r - N_1 \cdot r - M_t = \frac{1}{2} m_b r^2 \cdot \varepsilon \quad / + M_t$

$N_2 \cdot r - N_1 \cdot r = \frac{1}{2} m_b r^2 \cdot \varepsilon + M_t$

$(N_2 - N_1) r = \frac{1}{2} m_b r^2 \cdot \varepsilon + M_t$

$\Delta F_N \cdot r = \frac{1}{2} m_b r^2 \varepsilon + M_t \quad / : r$

$\Delta F_N = \frac{\frac{1}{2} m_b r^2 \varepsilon + M_t}{r}$

$\Delta F_n = \frac{1}{2} m_b r^2 \varepsilon + \frac{M_t}{r}$

PODSTAWIAMY:

$\Delta F_N = \frac{1}{2} \cdot 0{,}06\,kg \cdot 0{,}06\,m \cdot 8\,\frac{rad}{s^2} + \frac{0{,}03\,N\cdot m}{0{,}06\,m} =$

$= 0{,}0144\,kg \cdot \frac{m}{s^2} + 0{,}5\,N = 0{,}0144\,N + 0{,}5\,N =$

$= 0{,}5144\,N \approx 5\,N$