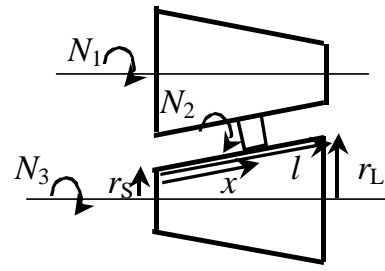
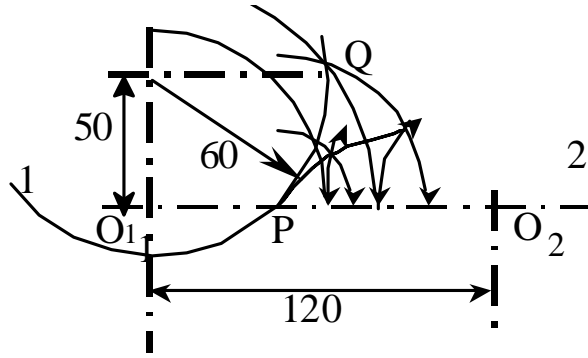


4章 演習問題解答

1.



2.

4.3.3 項より,

$$2a=300 \rightarrow a=150 \rightarrow \text{長軸}=300$$

一方, 4.3.4 項より

$$\frac{150 + \sqrt{150^2 - b^2}}{150 - \sqrt{150^2 - b^2}} = 9 \rightarrow 150 + \sqrt{\quad} = 9 \cdot 150 - 9 \cdot \sqrt{\quad}$$

$$\therefore 10\sqrt{\quad} = 8 \cdot 150$$

$$\therefore \sqrt{\quad} = 8 \cdot 15 = 120$$

$$\therefore b = \sqrt{22500 - 14400} = 90 \rightarrow \text{短軸} = 180$$

3.

$$\left. \begin{aligned} r_1 + r_2 &= 250 \\ \frac{r_2}{r_1} &= \frac{600}{150} \end{aligned} \right\} \rightarrow r_1=200, \quad r_2=50 \rightarrow$$

$$d_1=400, \quad d_2=100$$

4.

$$\left. \begin{aligned} \frac{\sin \delta_1}{\sin \delta_2} &= \frac{1}{3} \\ \delta_1 + \delta_2 &= 90^\circ \end{aligned} \right\} \rightarrow$$

5.

$$\left. \begin{aligned} \frac{\sin \delta_1}{\sin \delta_2} &= \frac{1}{2} \\ \delta_1 + \delta_2 &= 60^\circ \end{aligned} \right\} \rightarrow$$

6.

$$(4.12) \text{より} \quad F \leq 0.2 \cdot 500 = 100N \quad \text{最大}$$

100N

7. 図の変速摩擦伝動装置において, 中間のころの位置に対する速比の変化の状態をグラフに示せ. ただし二つの円すい車の大きさは同じとする.

$$\frac{N_2}{N_1} = \frac{r_S + \frac{r_L - r_S}{l}(l-x)}{r_1}$$

$$\frac{N_3}{N_2} = \frac{r_1}{r_S + \frac{r_L - r_S}{l}x}$$

$$\therefore \frac{N_3}{N_1} = \frac{N_2}{N_1} \cdot \frac{N_3}{N_2} = \frac{r_S + \frac{r_L - r_S}{l}(l-x)}{r_S + \frac{r_L - r_S}{l}x}$$

例えば, $r_S=1, \quad r_L=11, \quad l=10$ の場合

$$\therefore \frac{N_2}{N_1} = \frac{1 + \frac{11-1}{10}(10-x)}{1 + \frac{11-1}{10}x} = \frac{1+10-x}{1+x} = \frac{11-x}{1+x}$$

