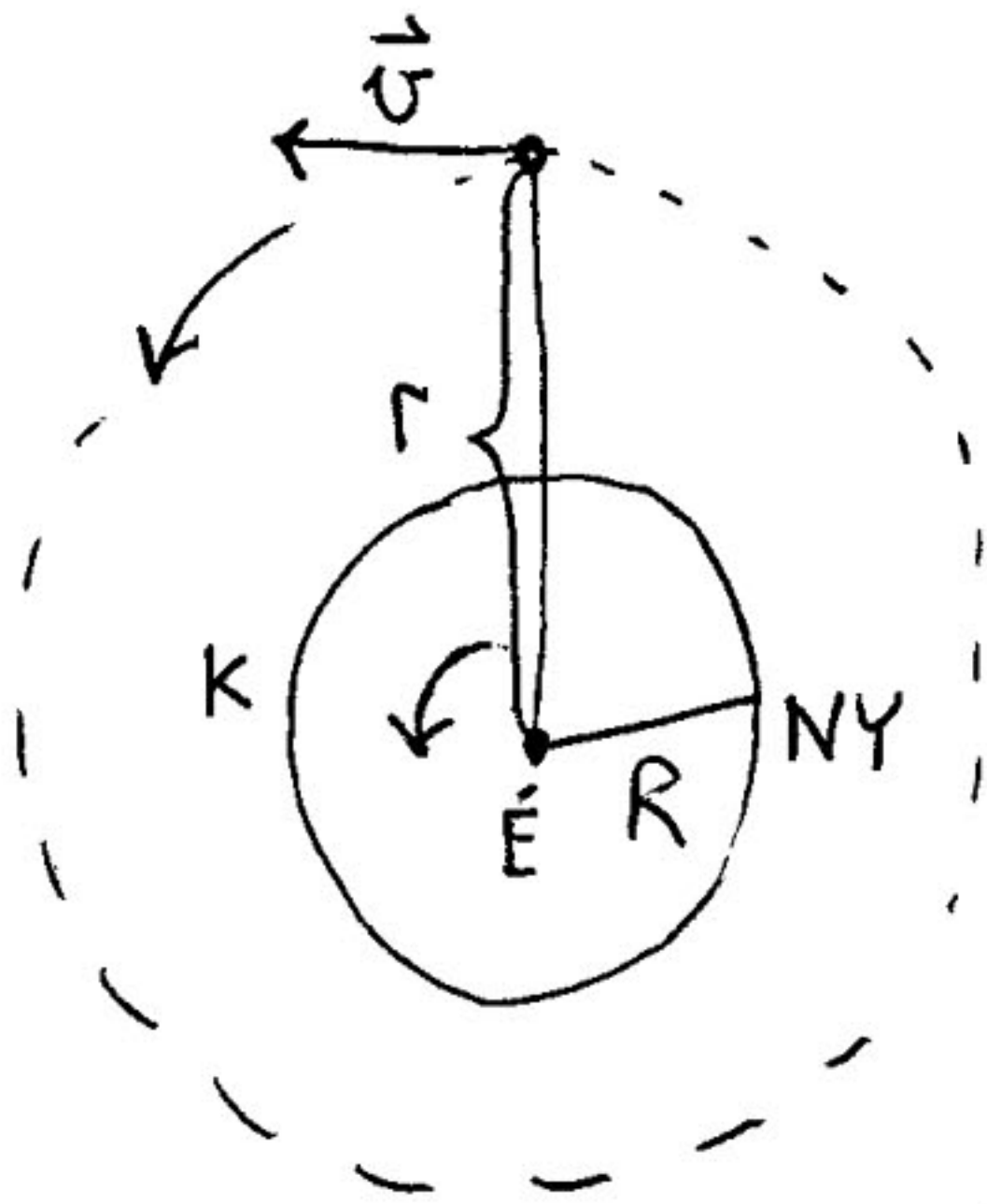


43.

$$R = 6370 \text{ km}$$

$$T = 24 \text{ h} = 86400 \text{ s}$$

(i) $r = ?$ (ii) $v = ?$ 

$$\omega = \frac{2\pi}{T}$$

$$v = \frac{2r\pi}{T}$$

$$F_G = G \frac{Mm}{r^2}$$

$$a_{cp} = \frac{v^2}{r} = \omega^2 r$$

$$\vec{a} = \frac{F_e}{m}$$

$$(i) \quad F_e = F_G = G \frac{Mm}{r^2} = m\omega^2 r$$

Felszinen:

$$G \frac{Mm}{R^2} = mg$$

$$GM = r^3 \frac{4\pi^2}{T^2}$$

$$\leftarrow GM = gR^2$$

$$gR^2 = r^3 \frac{4\pi^2}{T^2}$$

$$r = \sqrt[3]{\frac{gR^2 T^2}{4\pi^2}} = \dots$$

(ii)

$$v = \frac{2r\pi}{T} = \dots$$