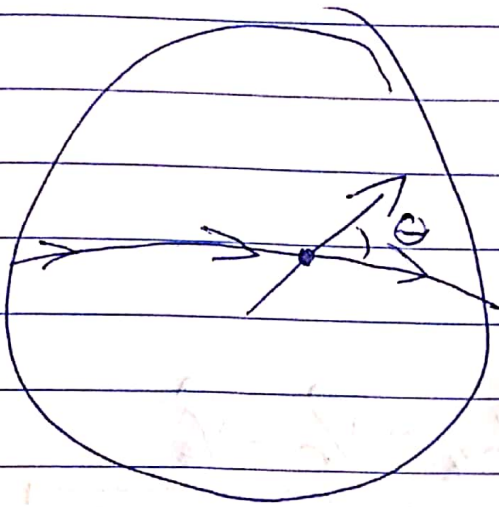


20-P-KM-BK-031

Date



given:

earth radius: 6400 km

ISS height: 400 km

ISS orbital

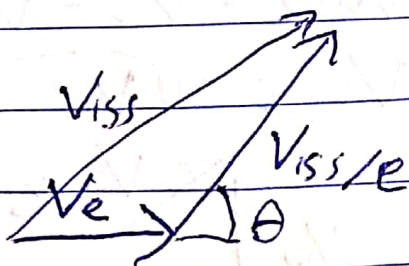
period: 90 minutes

Earth day: 24 hours

angle with equator: θ

A.)
$$V_{iss/e} = \text{circumference} / \text{period}$$
$$= (6400 + 400) \cdot 2\pi / (90 \cdot 60)$$
$$= 7.91 \text{ km/s}$$

B.)
$$V_{equator} = \text{circumference} / \text{period}$$
$$= 6400 \times 2\pi / (24 \times 60 \times 60)$$
$$= 0.465 \text{ km/s}$$



$$|V_{iss}| = \sqrt{(V_e + \cos(\theta)V_{iss/e})^2 + (\sin(\theta)V_{iss/e})^2}$$