

5.

3 維坐標化

$F(0,0,0), B(0,0,16), H(20,12,0), G(20,0,0)$

$$\overrightarrow{FG} = (20, 0, 0)$$

$$\overrightarrow{BH} = (20, 12, -16)$$

$$\overrightarrow{FG} = \begin{cases} x = 20t \\ y = 0 \\ z = 0 \end{cases} \text{ 其中 } t \in \mathbb{R}$$

$$\overrightarrow{BH} = \begin{cases} x = 20s \\ y = 12s \\ z = 16 - 16s \end{cases} \text{ 其中 } s \in \mathbb{R}$$

令  $L$  為歪斜線, 且交點分別為  $I(20t, 0, 0), J(20s, 12s, 16 - 16s)$

$\vec{L} = (0, 4, 3)$  (用  $\overrightarrow{FG} = (20, 0, 0)$  和  $\overrightarrow{BH} = (20, 12, -16)$  外積求出)

$$\frac{20s - 20t}{0} = \frac{12s}{4} = \frac{16 - 16s}{3}$$

解得  $s = t = \frac{16}{25}$

$$I\left(\frac{64}{5}, 0, 0\right), J\left(\frac{64}{5}, \frac{192}{25}, \frac{144}{25}\right)$$

$$IJ = \sqrt{\left(\frac{192}{25}\right)^2 + \left(\frac{144}{25}\right)^2} = \frac{1}{25} \sqrt{36864 + 20736} = \frac{240}{25} = \frac{48}{5}$$