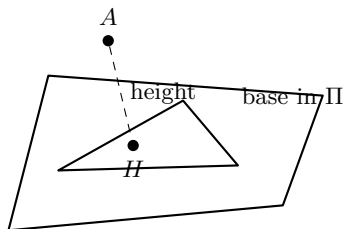


Question 9

A tetrahedron has base vertices $B = (0, 0, 0)$, $C = (4, 0, 0)$, $D = (1, 3, 0)$ and apex $A = (2, 1, 6)$. Find the base plane, the height, and the volume. Then find the plane parallel to the base that cuts the tetrahedron at half its height.

Question 9 – Solution

Strategy The base is horizontal. Volume is one third of base area times perpendicular height.



Base and height The base plane is $z = 0$. Its triangular area is $\frac{1}{2}(4)(3) = 6$, and the apex is 6 units from the plane.

Volume Thus $V = \frac{1}{3}(6)(6) = 12$.

Half-height plane The plane parallel to $z = 0$ halfway from the base to the apex is $z = 3$.

Verification Distance from $z = 3$ to both $z = 0$ and A 's level $z = 6$ is 3.