

SECTION - 1

ANS - 2

ANSWER -

$$\text{let } P = (x, y, z)$$

$$\text{given } 3PA = 2PB$$

$$\Rightarrow 9PA^2 = 4PB^2$$

$$\Rightarrow 9[(x+2)^2 + (y-2)^2 + (z-3)^2] = 4[(x-13)^2 + (y+3)^2 + (z-13)^2]$$

$$\Rightarrow 9[x^2 + y^2 + z^2 + 4x - 4y - 6z + 17] = 4[x^2 + y^2 + z^2 - 26x + 6y - 26z + 347]$$

$$\Rightarrow x^2 + y^2 + z^2 + 28x - 12y + 10z - 247 = 0 \quad \text{is the locus of the point P.}$$