

# Section-I

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Ans 2

$$P : (x, y, z)$$

$$A : (-2, 2, 3) \quad B = (13, -3, 13)$$

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

$$PA = \sqrt{(x+2)^2 + (y-2)^2 + (z-3)^2}$$

$$PB = \sqrt{(x-13)^2 + (y+3)^2 + (z-13)^2}$$

$$3PA - 2PB \Rightarrow \cancel{3PA} \quad 9(PA)^2 = 4(PB)^2$$

$$9((x+2)^2 + (y-2)^2 + (z-3)^2) = 4((x-13)^2 + (y+3)^2 + (z-13)^2)$$

$$9(x^2 + 4x + 4 + y^2 - 4y + 4 + z^2 - 6z + 9)$$

$$= 4(x^2 + 169 - 26x + y^2 + 6y + 9 + z^2 - 26z - 169)$$

$$5(x^2 + y^2 + z^2) + 140x - 60y + 50z - 1236$$

$$+ 15z - 1388$$


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$$- 1235$$

$$5(x^2 + y^2 + z^2) + 140x - 60y + 50z - 1236 = 0$$