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Math 53 Quiz 7

Find an equation for the plane consisting of all points that are equidistant from the points $(2,5,5)$ and $(-6,3,1)$.

$P = (2,5,5)$

$Q = (-6,3,1)$

consider a point (x,y,z)

distance of the point to $P = \sqrt{(x-2)^2+(y-5)^2+(z-5)^2}$

" " " " " Q_2 $\sqrt{(x+6)^2+(y-3)^2+(z-1)^2}$

$$(x-2)^2+(y-5)^2+(z-5)^2 = (x+6)^2+(y-3)^2+(z-1)^2$$

$$\cancel{x^2+y^2+z^2} - 4x - 10y - 10z + 54 = \cancel{x^2+y^2+z^2} + 12x - 6y - 2z + 46$$

$$\boxed{4x + y + 2z = 2}$$