

dist b/w 2 // planes, pick a pt on one and do pt to plane formula

line vector
anchor (pt on 2 w/ pt on other)

$$d = \frac{|W \times V|}{|V|}$$

distance b/w 2 // lines

W V

mag $|V \times W| = |V| |W| \sin \theta$ $\leftarrow$ $\angle$ b/w 2 vectors

area created by 2 vectors U and $V: |U \times V|$

$U \times V = 0$ if $U \parallel V$

abs value

distance (point to plane)

$$\frac{|ax + by + cz + d|}{\sqrt{a^2 + b^2 + c^2}}$$

OR $\frac{|\vec{V} \cdot \vec{n}|}{|\vec{n}|}$

V = vector w/ pt in plane and pt in space
 n = normal vector of plane

2 // lines: $d^2 = |W|^2 - |\text{proj}_V W|^2$

W = vector made from pt on 1 line to pt on another
 V = vector of line

line on plane: direction #'s of line dotted w/ A, B, C in eqn of plane must $= 0$ b/c line on plane is $\perp$ to plane's normal vector

Plane matrices:

If $[0001]$, no common intersection b/w all 3 planes, do all 3 combos of 2 planes at a time b/c intersect at 3 lines
If $[0000]$, 1 line of intersection

If a plane $\perp$ to 2 planes, the cross product of the 2 planes' normals are the a,b of the plane you want to find

If finding d value on plane by plugging in pt, same as dotting dir #'s of plane w/ $(x - x_{\text{cor of pt}}, y - y_{\text{cor of pt}}, z - z_{\text{cor of pt}})$ #31 in a.b

if a plane $\parallel$ to 2 planes in eqn, it's not in plane