Point to Plane Distance

A Plane may be defined as:

$$Ax + By + Cz + D = 0$$

Where, given 3 points on that Plane $(x1,y1,z1)$, $(x2,y2,z2)$ & $(x3,y3,z3)$:

$A = y1(z2 - z3) + y2(z3 - z1) + y3(z1 - z2)$
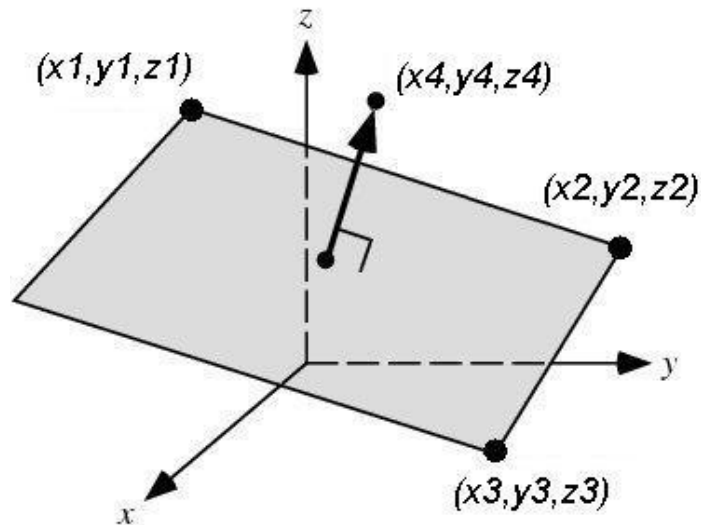$B = z1(x2 - x3) + z2(x3 - x1) + z3(x1 - x2)$
$C = x1(y2 - y3) + x2(y3 - y1) + x3(y1 - y2)$
$-D = x1(y2z3 - y3z2) + x2(y3z1 - y1z3) + x3(y1z2 - y2z1)$

Then, $\qquad$ D = -1(-D)

Diagram:

The perpendicular distance to a Point $(x4,y4,z4)$ to this Plane may be given as:

$$\frac{A(x4) + B(y4) + C(z4) + D}{\sqrt{(A^2 + B^2 + C^2)}}$$

$\qquad$ Revised January 2014