Date: June 25, 2013, Tuesday NAME:.....

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Math 102 Summer 2013 – QUIZ # 4 – Section 001

Find an equation of the plane that passes through the point $(1, 5, 1)$ and is perpendicular to the planes $2x + y - 2z = 2$ and $x + 3z = 4$.

Solution:

An equation for this plane is of the form

$$\vec{n} \cdot (x, y, z) = \vec{n} \cdot (1, 5, 1),$$

where

$$\vec{n} = (2, 1, -2) \times (1, 0, 3) = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 2 & 1 & -2 \\ 1 & 0 & 3 \end{vmatrix} = (3, -8, -1).$$

Then the above equation for this plane becomes

$$3x - 8y - z = -38.$$