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MATH 20C, SECTION A08   October 28, 2014

Quiz 2

Show all your work for full credit. To maximize credit, cross out incorrect work.

No credit will be given for unsupported answers.

1. (10 points) Find the intersection of the line $\vec{r}(t) = \langle 1 - 2t, 2 - t, t + 1 \rangle$ and the plane $x - 4y + 5z = 5$.

Solution.

Line : $\vec{r}(t) = \langle 1-2t, 2-t, t+1 \rangle$

Plane : $x - 4y + 5z = 5$

Any point on the line $\vec{r}(t)$ is of the form $P(1-2t, 2-t, t+1)$

Substituting in plane eqn.

$$(1-2t) - 4(2-t) + 5(t+1) = 5$$

$$1 - 8 + 5 - 5 = 2t - 4t - 5t$$

$$-7 = -7t \quad \Rightarrow \quad \boxed{t = 1}$$

Thus, the pt. of intersection is

$$P = (1 - 2(1), (2-1), (1+1))$$

$$= (-1, 1, 2)$$

Good luck! ☺