

Name \_\_\_\_\_ Date \_\_\_\_\_

Instructions: Please show all of your work as partial credit will be given where appropriate, **and** there may be no credit given for problems where there is no work shown. All answers should be completely simplified, unless otherwise stated.

1. If  $\mathbf{a}=\langle 3,3,2 \rangle$  ,  $\mathbf{b}=\langle -1, \quad , \quad \rangle$  and  $\mathbf{c}=\langle -1,2,4 \rangle$  ,

(a) find  $\mathbf{a}\cdot(\mathbf{b}-\mathbf{c})$  .

(b) find  $|\mathbf{a}|(\mathbf{b}\times\mathbf{c})$

$$\mathbf{a}\cdot(\mathbf{b}-\mathbf{c}) = \underline{\hspace{10cm}}$$

$$|\mathbf{a}|(\mathbf{b}\times\mathbf{c}) = \underline{\hspace{10cm}}$$

2. Find parametric equations for the line of intersection of the planes  
 $5x-3y-2z = 5$  and  $x + y + 2z = 3$ .

Parametric Equations: \_\_\_\_\_

3. For the particle with position vector  $\mathbf{r}(t) = (3t+4)\mathbf{i} + e^t\mathbf{j} + \sin(2t)\mathbf{k}$  calculate the velocity  $\mathbf{v}(t)$  and the acceleration  $\mathbf{a}(t)$ .

$$\mathbf{v}(t) = \underline{\hspace{15cm}}$$

$$\mathbf{a}(t) = \underline{\hspace{15cm}}$$