

NAME (print): \_\_\_\_\_

**No credit for unsupported answers will be given. Clearly indicate your final answer**

1. [3 pts.] Find an equation of the plane that passes through the point  $(-1, 0, 1)$  and contains the line  $x = 5t$ ,  $y = 1 + t$ ,  $z = -t$ .

2. (a) [2 pts.] Find an equation of the plane  $\pi$  that passes through the point  $P(2, 8, 5)$  and is orthogonal to the line  $L$  given by  $x = 2 + t$ ,  $y = 2 - 3t$ ,  $z = 5t$ .

(b) [1 pts.] Find the point  $S$  of intersection of the plane  $\pi$  and the line  $L$ .

(c) [1 pts.] Find  $|PS|$ , that is, the distance from the point  $P$  to the line  $L$ .

3. [3 pts.] Find **parametric** equations of a line that passes through the point  $(1, 1, 1)$  and is parallel to the line of intersection of the planes  $x + z = 1$  and  $y + z = 1$ .