

**Math 225: Calculus III**  
**Quiz 4 Sept. 29/Oct. 2, 1992**

Name: \_\_\_\_\_

Section: \_\_\_\_\_

1. A particle's position is given by

$$(t) = (t - \cos(t)) \mathbf{i} + (1 - \sin(t)) \mathbf{j} + t \mathbf{k}$$

Find the tangential component of its acceleration at any time  $t$ .

2. Find the *points* in space (if any) where the curve defined by

$$(t) = (t^2 + 2t) \mathbf{i} + (t^3 + \frac{3}{2}t^2) \mathbf{j} + (t^4 + 4t) \mathbf{k}$$

is not smooth.