Math 126B **Calculus With Analytic Geometry III** **Fall 1995**

QUIZ #4 ANSWERS

10/19/95

The line m in space is defined by the equations

$$x(s) = 2 + 2s$$
$$y(s) = 2 + s$$
$$z(s) = 2 - 2s$$

Another line k is defined by

$$x(u) = 2 - u$$
$$y(u) = 1$$
$$z(u) = 2 + u$$

Observe that they intersect at the point $Q(0, 1, 4)$.

(1) Find the components of a vector parallel to m and a vector parallel to k.

Vector parallel to $m =$ $\boxed{(2, 1, -2)}$

Vector parallel to $k =$ $\boxed{(-1, 0, 1)}$

(2) Find a vector $\vec{n}$ that is perpendicular to both lines.

$\vec{n} =$ $\boxed{(1, 0, 1)}$

(3) Write down a parameter representation for the line through Q which is perpendicular to both lines, in the following form:

$x(t) =$ $\boxed{t}$

$y(t) =$ $\boxed{1}$

$z(t) =$ $\boxed{4 + t}$