1. Given the following displacement field

$u = x^2 + 2yz$

$v = xz$

$w = z^2 - y^2$

Find

(1). $\epsilon_{ij}(x, y, z)$ and $\Omega_k(x, y, z)$.

(2). $\epsilon_{ij}(3, 4, 1)$ and $\Omega_k(3, 4, 1)$.

(3). Find the principal strain and direction for (2).

(4). Find the invariant for (3).