

### MATH 116-02 QUIZ 3

Surname\ Name:

ID:

**Problem.** Let  $f(x, y, z) = xy + yz + zx$ ,  $P_0(1, -1, 2)$ ,  $\vec{A} = 3\vec{i} + 6\vec{j} - 2\vec{k}$ .

(a) Find the gradient of function  $f(x, y, z)$  at the point  $P_0$ .

(b) Find the derivative of  $f$  at  $P_0$  in the direction of  $\vec{A}$ .

(c) Find an equation for the plane tangent to the surface  $f(x, y, z) = -1$  at the point  $P_0$ .