1. (5 Points) Find the shortest distance from the point \((2, 1, -1)\) to the plane \(x + y - z = 1\).

2. \(f(x, y) = y \ln x, P : (1, -3), \vec{u} = \langle -\frac{4}{5}, \frac{3}{5} \rangle\).
   (a) (2 Points) Find the gradient of \(f\).
   (b) (1 Point) Evaluate the gradient at \(P\).
   (c) (2 Points) Find the rate of change of \(f\) at \(P\) in the direction of the vector \(\vec{u}\).