

Show all work. 5 points each.

1) Find the equation of the tangent plane for  $z = \sqrt{4 - x^2 - 2y^2}$  at  $(1, -1, 1)$ .

2) Use the chain rule to find  $\frac{\partial z}{\partial s}$  where  $z = x^2 + xy + y^2$ ,  $x = s + t$  and  $y = st$ .