

Show all work. 5 points each.

1. Find the equation of the tangent plane for the surface  $z = \sqrt{xy}$  at the point  $(1, 1, 1)$ .

2. Find  $\frac{\partial z}{\partial t}$  for  $z = x^2y^3$ ,  $x = s \cos(t)$ ,  $y = s \sin(t)$