

Show all work. 5 points each.

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

2. Use the chain rule to find $\frac{\partial z}{\partial s}$ and $\frac{\partial z}{\partial t}$ for $z = x^2y^3$, $x = s \cos t$ and $y = s \sin t$.