

1.(1 pt) Find the equation of the tangent plane to the surface $z = 9y^2 - 1x^2$ at the point $(1, 1, 8)$.

$z =$ _____

Note: Your answer should be an expression of x and y ; e.g. "3x - 4y + 6"

2.(1 pt) Find the equation of the tangent plane to the surface $z = e^{-3x/17} \ln(2y)$ at the point $(4, 3, 0.8845)$.

$z =$ _____

Note: Your answer should be an expression of x and y ; e.g. "5x + 2y - 3"

3.(1 pt) Find the linearization $L(x,y)$ of the function $f(x,y) = \sqrt{17 - 1x^2 - 4y^2}$ at $(0,2)$.

$L(x,y) =$ _____

Note: Your answer should be an expression in x and y ; e.g. "3x - 5y + 9"

4.(1 pt) Find the differential of the function $w = x \sin(4yz^4)$.

$dw =$ _____ $dx +$ _____ $dy +$ _____ dz

Note: Your answers should be expressions of x , y and z ; e.g. "3xy + 4z"

5.(1 pt) The dimensions of a closed rectangular box are measured as 70 centimeters, 90 centimeters, and 50 centimeters, respectively, with the error in each measurement at most .2 centimeters. Use differentials to estimate the maximum error in calculating the surface area of the box.

_____ square centimeters

6.(1 pt) Find an equation of the tangent plane to the parametric surface $x = -1r \cos \theta$, $y = -4r \sin \theta$, $z = r$ at the point $(-1\sqrt{2}, -4\sqrt{2}, 2)$ when $r = 2$, $\theta = \pi/4$.

$z =$ _____

Note: Your answer should be an expression of x and y ; e.g. "3x - 4y"