

COMPUTER PROJECT 5

Tangent Planes

DUE: 01/05/2022

Instructions: Use *Mathematica* to solve the following problems. Email a copy of your finalized notebook to byoung@wyoingseminary.org with the subject "Computer Project 5." Data for each student can be found on the following page.

- 1.) Produce a plot of the surface $z = f(x, y)$ and the tangent plane to the surface at the given point P .
- 2.) Produce a plot of the surface given in the form $F(x, y, z) = c$ along with the tangent plane to the surface at the given point Q .

Student Data

Student	Data for 1.)	Data for 2.)
David Chen	$f(x, y) = x^2y + xy^3$ $P = (2, 1)$	$x^2 + 2y^2 + z^2 = 2$ $Q = (1, 0, 1)$
Hayoung Kim	$f(x, y) = \frac{x}{\sqrt{y}}$ $P = (4, 4)$	$2x^2 + y^2 + 3z^2 = 4$ $Q = (0, 1, 1)$
Alex Lee	$f(x, y) = x^2 + \frac{1}{y^2}$ $P = (4, 1)$	$x^2 + 4y^2 + 2z^2 = 5$ $Q = (1, 1, 0)$
Nansen Wang	$f(x, y) = e^{x/y}$ $P = (2, 1)$	$2x^2 + y^2 + 3z^2 = 5$ $Q = (1, 0, 1)$
Ben Zhao	$f(x, y) = \ln(4x^2 - y^2)$ $P = (1, 1)$	$x^2 + y^2 + 6z^2 = 2$ $Q = (1, 1, 0)$