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11. Practice finding tangent planes

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Lecture due Aug 4, 2021 20:30 IST Completed

Practice

Practice 1

1.0/1 point (graded)

Find the equation for the tangent plane to the surface defined by the function $f(x,y) = \cos(x)\sin(y)$ at the point $(0,\pi)$.

Express the tangent plane as a function of x and y.

$z =$ pi-y ✔ **Answer:** pi-y

? INPUT HELP

Solution:

$$\begin{aligned} f(0,\pi) &= 0 \\ f_x(x,y) &= -\sin(x)\sin(y), \qquad f_x(0,\pi) = 0 \\ f_y(x,y) &= \cos(x)\cos(y), \qquad f_y(0,\pi) = -1 \end{aligned}$$

Using the data we computed, we write the equation for the tangent plane as

$$z = 0 - 0x - 1(y-\pi) = \pi - y.$$

Submit You have used 1 of 7 attempts

Answers are displayed within the problem

Practice 2

1.0/1 point (graded)

Find the equation for the tangent plane to the surface defined by the function $g(x,y) = x^3 - y^3 + xy$ at the point $(1,2)$.

Express the tangent plane as a function of Δx and Δy. (Type Deltax for Δx, and Deltay for Δy.)

$z =$ -5+5*Deltax-11*Deltay ✔ **Answer:** -5 + 5*Deltax - 11*Deltay

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Solution:

$$\begin{aligned} g(1,2) &= -5 \\ g_x(x,y) &= 3x^2 + y, \qquad g_x(1,2) = 5 \\ g_y(x,y) &= -3y^2 + x, \qquad g_y(1,2) = -11 \end{aligned}$$

Using the data we computed, we write the equation for the tangent plane as

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$$z = -5 + 5\Delta x - 11\Delta y.$$

Submit You have used 1 of 7 attempts

Answers are displayed within the problem

11. Practice finding tangent planes

Topic: Unit 1: Functions of two variables / 11. Practice finding tangent planes

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? Practice 1
Dear teacher, My answer is z ≈ -y, but I'm getting the message "Almost! Remember that we are not taking the tangent plane at the or... 2

Practice finding tangent planes, Practice 2 2

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