

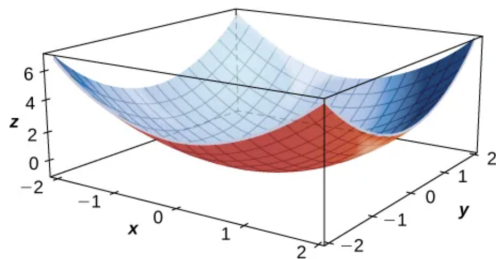
10 09-25-2025

10.1 Section 4.3, Checkpoint 4.13

Calculate $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$ for the function $f(x, y) = \tan(x^3 - 3x^2y^2 + 2y^4)$ by holding the opposite variable constant, then differentiating.

10.2 Section 4.3, Exercises 114-117

Calculate the sign of the partial derivative using the graph of the surface f below.



114. $f_x(1, 1)$

115. $f_x(-1, 1)$

116. $f_y(1, 1)$

117. $f_x(0, 0)$

10.3 Section 4.4, Checkpoint 4.19

Find the equation of the tangent plane to the surface defined by the function

$$f(x, y) = x^3 - x^2y + y^2 - 2x + 3y - 2 \text{ at the point } (-1, 3)$$

10.4 Section 4.4, Checkpoint 4.22

Find the differential dz of the function

$$f(x, y) = 4y^2 + x^2y - 2xy$$

and use it to approximate Δz at point $(1, -1)$. Use $\Delta x = 0.03$ and $\Delta y = -0.02$. What is the exact value of Δz ?