KNEWTON | alta

Introduction to Multivariable Functions

Learning Objectives

- Evaluate a multivariable function
- Sketch a point in three-dimensional space
- Graph a cross section of a multivariable function

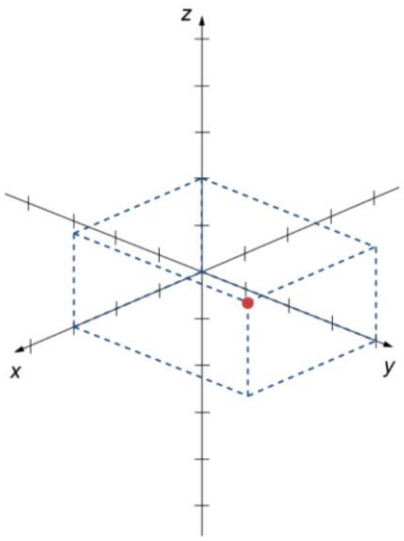
Evaluate a multivariable function

1. Evaluate each multivariable function at the indicated point.
   a. $f(x,y) = x^2 + 2xy - 4y^2, (1,-2)$

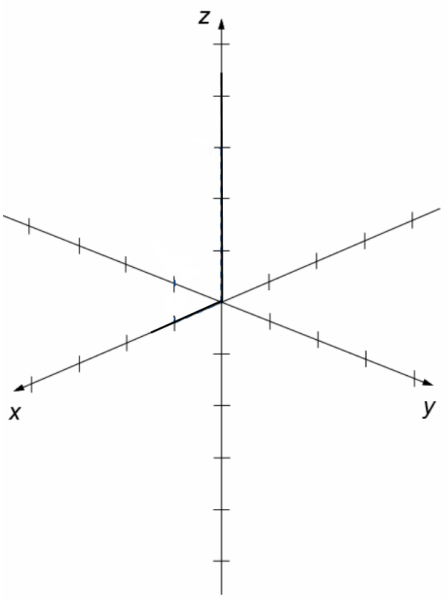
   b. $f(x,y,z) = z^2 e^{xy} - \frac{z}{1+x^2y^2}, (4,0,-2)$

Sketch a point in three-dimensional space

2. Identify the point shown in the graph.



3. Plot the point (4,1,-1) on the graph below.



Graph cross sections of a multivariable function

4. Sketch the cross-section of the graph $f(x, y) = x^2 + 2xy - 4y^2$ for each condition.

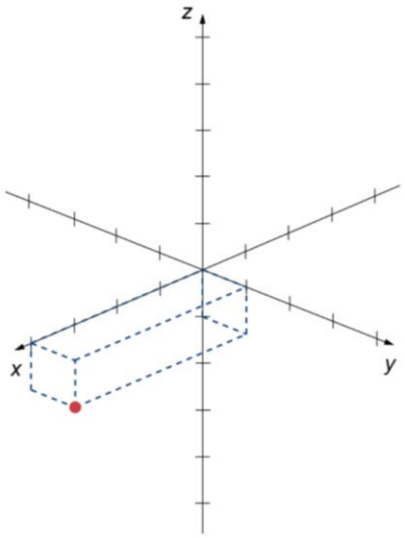
   a. $x = 1$

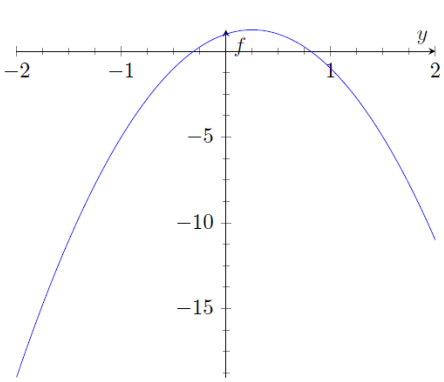
   b. $y = -1$

ANSWER KEY

1. a. -19; b. 6

2. (3,4,2)

3. 

4. a. 

b.