

PARTIAL DERIVATIVES: GEOMETRIC VISUALIZATION

Note: This activity was written to correspond with animations written by David R. Hill and presented in Demos with Positive Impact (<http://mathdemos.gcsu.edu/mathdemos/index.html>) under the title Partial Derivative Geometrically Gallery.

For each of the following functions, find the indicated partial derivative. Please show all of your calculations for #3 and #10.

1. $f(x, y) = -x^2 + y$ y -partial

2. $f(x, y) = -x^2 + y$ x -partial

3. $f(x, y) = \sqrt{\sin(x^2 + y^2)}$ y -partial

4. $f(x, y) = \frac{1}{9}y^3 \sin(x)$ x -partial

5. $f(x, y) = 0.5x^2 + 2y^2$ x -partial

6. $f(x, y) = 0.5x^2 + 2y^2$ y -partial

7. $f(x, y) = \sin(x) \cos(2y)$ x -partial

8. $f(x, y) = 0.5x^2 - 0.5y^2$ x -partial

9. $f(x, y) = e^{-x^2} + e^{-4y^2}$ y -partial

10. $f(x, y) = \frac{-4}{1 + x^2 + 2y^2}$ y -partial