



Partial Derivatives

Chapter: Multivariable Calculus • Level ★★★ •
Time: 30 min

SCORE

___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Compute partial derivatives by treating the other variables as constants.
- ✓ Interpret f_x and f_y as slopes in the x - and y -directions.
- ✓ Find first-order partials of multivariable functions.
- ✓ Evaluate partial derivatives at a point.



Section A • Concept Check

• BEGINNER

 $4 \times 1 = 4$ _____

- 1 f_x for $f(x,y) = 5x^2y + 3y = ?$
☐ A. $10xy$ ☐ B. $5x^2 + 3$ ☐ C. $10x$ ☐ D. $5xy$
- 2 f_y for $f(x,y) = 5x^2y + 3y = ?$
☐ A. $10xy$ ☐ B. $5x^2 + 3$ ☐ C. 3 ☐ D. $5x^2$
- 3 To find f_x , treat y as a:
☐ A. variable ☐ B. constant ☐ C. zero
☐ D. function
- 4 f_x for $f(x,y) = x^3 + xy^2 = ?$
☐ A. $3x^2 + y^2$ ☐ B. $2xy$ ☐ C. $3x^2$
☐ D. $x^2 + y^2$



Section B • Problem Solving

• INTERMEDIATE

 $2 + 3 \times 3 = 11$ _____

- 5 To find f_x , treat y as a _____
- 6 f_x for $f(x,y) = 5x^2y + 3y =$ _____
- 7 Find f_x for $f(x,y) = 5x^2y + 3y$.

- 8 Find f_y for $f(x,y) = 5x^2y + 3y$.

- 9 Find f_x for $f(x,y) = x^3 + xy^2$.



Section C • Challenge

• CHALLENGE

5 _____

- 10 Find f_y for $f(x,y) = x^3 + xy^2$.

🧠 Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature _____

Parent's Signature _____

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-B 3-B 4-A | 5 constant 6 $10xy$ 7 = $10xy$ 8 = $5x^2 + 3$ 9 = $3x^2 + y^2$ | 10 = $2xy$

