

[Bookmark this page](#)

### Partial Derivatives

1 point possible (graded, results hidden)

(SADT) If  $f(x_1, x_2, \dots, x_n) = \sum_{1 \leq i < j \leq n} x_i x_j$ , then  $\frac{\partial f}{\partial x_n} =$

☒  $n!$

☐  $\sum_{j=1}^{n-1} x_j$

☐  $\sum_{j=1}^n x_j$

☐  $\sum_{1 \leq i < j < n} x_i x_j$

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(MJM) For the function  $f(x, y) = e^{2x+y^2}$ , find the value of the partial derivative  $f_{xyy}(0, 0)$ .

☐ 1

☐ 4

☐  $4e$

☐  $2e^2$

Submit

### Partial Derivatives

1 point possible (graded, results hidden)

(MMRU)  $f(x, y) = x^3 + y^2$  and  $x = t^2 + t^3$  and  $y = t^4 + t^5$  find  $\frac{df}{dt}$  at  $t = 1$

☐ 100

☐ 101

☐ -101

☐ 0

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(MJM) Let  $g(y, z) = \arctan\left(\frac{y}{z}\right)$  find the value of  $g_z(1, 2)$

☐ -1

☐ -1/5

☐ 1/3

☐ 1

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(MJM) If all the third-order partial derivatives of a function  $g(x, y)$  are continuous, what is the largest number of them that can be distinct?

☐ 3

☐ 4

☐ 5

☐ 8

Submit

### Critical Points and Their Natures

1 point possible (graded, results hidden)

(MMRU) Let  $f(x, y) = x^3 + y^3 - 3xy$  for all real  $x$  and  $y$ . Then there exists distinct points  $P$  and  $Q$  such that  $f$  has a:

☐ local maximum at  $P$  and at  $Q$

☐ saddle point at  $P$  and at  $Q$

☐ local maximum at  $P$  and a saddle point at  $Q$

☐ local minimum at  $P$  and a saddle point at  $Q$

☐ saddle point at  $P$  and at  $Q$

☐ local maximum at  $P$  and a saddle point at  $Q$

☐ local minimum at  $P$  and a saddle point at  $Q$

Submit

## Functions of Two Variables

1 point possible (graded, results hidden)

☐  $x^2 + xy + y^2 + c$

☐  $x^2 - xy + y^2 + c$

☐  $x^2 - xy - y^2 + c$

☒  $x^2 + 2xy - y^2 + c$

Submit

## Partial Derivatives

### Partial Derivatives

1 point possible (graded, results hidden)

(MMRU) Given  $F(a, b) = 2a - a^3 + 3ab^2$  Which of the following is true?

☐  $F_a + F_b = F_{ab}$

☐  $F_{aa} + F_{bb} = 0$

☐  $F_{ab} + F_{aa} = 0$

☐  $F_{ab} + F_{bb} = 0$

Submit

## Multiple Choice

1 point possible (graded, results hidden)

(FAB) For the function  $u = x^a y^b z^c$ , find  $u_{xyz}$ .

☐  $x^{a-1} y^{b-1} z^{c-1}$

☐  $ab^2 c x^{a-1} y^{b-1} z^{c-1}$

◀ ▶ ↺ ↻ ↶ ↷

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(FAB) For the function  $u = x^a y^b z^c$ , find  $u_{xyz}$ .

☐  $x^{a-1} y^{b-1} z^{c-1}$

☐  $ab^2 c x^{a-1} y^{b-1} z^{c-1}$

☐  $abc^2 x^{a-1} y^{b-1} z^{c-1}$

☐  $abc x^{a-1} y^{b-1} z^{c-1}$

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(FAB) How many critical points are there for the function:  $f(x, y) = e^x \sin y$

☐ Three critical points

☐ No critical points

☐ One critical point

☐ Two critical points

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(AQD) Locate the relative extrema (if any) for  $f(x, y) = xy + \frac{2}{x} + \frac{4}{y}$

☐ Relative maximum at (2,1)

☐ Relative minimum at (1,2)

☐ Relative maximum at (2,-1)

☐ No conclusions

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(SKN) Consider the sphere  $x^2 + y^2 + z^2 = 1$ . Find  $\frac{\partial z}{\partial y}$  at  $(x, y, z) = (2/3, 1/3, 2/3)$

☐ undefined

☐ 1/2

☐ -1/2

☐ -2/3

Submit

### Multiple Choice

1 point possible (graded, results hidden)

(AQD) If  $f(x, y) = \sin(y^2 - 4x)$  then evaluate  $f_{xy}$ .

☐  $-16y \sin(y^2 - 4x)$

☐  $16 \cos(y^2 - 4x)$

☐  $-8y \sin(y^2 - 4x)$

☐  $8y \sin(y^2 - 4x)$

Submit

### Critical Value

1 point possible (graded, results hidden)

(MMRU) Find the critical point of the multivariable function  $f(x, y) = 5e^{(x^2 + y^2 - 2y)}$

☐  $(0, -2)$

☐  $(-2, 0)$

☐  $(0, 1)$

☐  $(-1, 0)$

Submit

< Previous

Next >