

No calculators will be allowed and no partial credit will be given.

1. Find f_x given $f(x, y) = 3x e^{xy^2}$.
2. Find f_y given $f(x, y) = 3 \ln(y + e^x)$.
3. Find $\frac{\partial f}{\partial x}$ given $f(x, y) = -2x e^{x^2 y}$.
4. Find $\frac{\partial f}{\partial x}$ given $f(x, y) = -3 \sin(x^2 y)$.
5. Find $f_y(-1, 1)$ given $f(x, y) = x y^4 + 2x^3 y$.
6. Find $\frac{\partial f}{\partial y}(0, 1)$ given $f(x, y) = 3y e^{xy} + x y^2$.
7. Find $f_x\left(\frac{\pi}{3}, 0\right)$ given $f(x, y) = 4 \sin(y + 2x)$.
8. Find $\frac{\partial f}{\partial y}\left(\frac{\pi}{3}, 0\right)$ given $f(x, y) = 4 \sin(2y + 3x)$.
9. Find f_x given $f(x, y, z) = y^2 e^{xz^2} + x y^3$.
10. Find f_y given $f(x, y, z) = \cos(2y^2 z + x)$.
11. Find $\frac{\partial f}{\partial x}$ given $f(x, y, z) = \ln(x z^2 + y^2 z)$.

1. $3xy^2 e^{xy^2} + 3e^{xy^2}$

2. $\frac{3}{y + e^x}$

3. $-4x^2 y e^{x^2 y} - 2e^{x^2 y}$

4. $-6xy \cos(x^2 y)$

5. -6

6. 3

7. -4

8. -8

9. $y^2 z^2 e^{xz^2} + y^3$

10. $-4yz \sin(2y^2 z + x)$

11. $\frac{z^2}{xz^2 + y^2 z}$