

Practice Problems. For each, find  $\frac{\partial f(x,y)}{\partial x}$  and  $\frac{\partial f(x,y)}{\partial y}$ .

1.  $f(x, y) = x + y$

$$\frac{\partial(f(x,y))}{\partial x} = 1$$

$$\frac{\partial(f(x,y))}{\partial y} = 1$$

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

$$\frac{\partial(f(x,y))}{\partial x} = 1$$

$$\frac{\partial(f(x,y))}{\partial y} = 0$$

3.  $f(x, y) = xy$

$$\frac{\partial(f(x,y))}{\partial x} = y$$

$$\frac{\partial(f(x,y))}{\partial y} = x$$

4.  $f(x, y) = x^2y^3$

$$\frac{\partial(f(x,y))}{\partial x} = 2xy^3$$

$$\frac{\partial(f(x,y))}{\partial y} = 3x^2y^2$$

5.  $f(x, y) = (x + 1)(y + 2)$

$$\frac{\partial(f(x,y))}{\partial x} = y + 2$$

$$\frac{\partial(f(x,y))}{\partial y} = x + 1$$

6.  $f(x, y) = (x + 1)^2(y + 2)^3$

$$\frac{\partial(f(x,y))}{\partial x} = 2(x + 1)(y + 2)^3$$

$$\frac{\partial(f(x,y))}{\partial y} = 3(x + 1)^2(y + 2)^2$$

7.  $f(x, y) = (2x + 1)^2(3y + 2)^3$

$$\frac{\partial(f(x,y))}{\partial x} = 4(2x + 1)(3y + 2)^3$$

$$\frac{\partial(f(x,y))}{\partial y} = 9(2x + 1)^2(3y + 2)^2$$

8.  $f(x, y) = \ln(x) + y$

$$\frac{\partial(f(x,y))}{\partial x} = \frac{1}{x}$$

$$\frac{\partial(f(x,y))}{\partial y} = 1$$

9.  $f(x, y) = \ln(2x^3) + y^2$

$$\frac{\partial(f(x,y))}{\partial x} = \frac{3}{x}$$

$$\frac{\partial(f(x,y))}{\partial y} = 2y$$