Answer on Question #52221 – Math – Multivariable Calculus

$$f(x,y)=\sin 2x\cos y+xy^2$$

Solution:

Let's compute the partial derivative of function f(x,y) with respect to y, with x held constant:

$$\frac{\partial f}{\partial y}=-\sin 2x\sin y+2xy$$

The rules work the same way here as it does with functions of one variable:

$\frac{\partial}{\partial y}(g(x,y)+h(x,y))=\frac{\partial g(x,y)}{\partial y}+\frac{\partial h(x,y)}{\partial y}$;

$\frac{\partial}{\partial y}(A(x)r(x,y))=A(x)\frac{\partial r(x,y)}{\partial y}$, where $A(x)$ is constant with respect to y;

$\frac{\partial}{\partial y}(\cos y)=-\sin y$;

$\frac{\partial}{\partial y}(y^n)=ny^{n-1}$, where n is integer.

Answer: $\frac{\partial f}{\partial y}=-\sin 2x\sin y+2xy$.