

# Quiz 7 MATH 2501 Fall 2018

Let

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

Compute  $\frac{\partial f}{\partial x}$  and  $\frac{\partial f}{\partial y}$ .

Soln:

$$\frac{\partial f}{\partial x} = 2x \sin(y) - \sin(x^2 y^2) (2xy^2) + ye^{xy}$$

$$\frac{\partial f}{\partial y} = x^2 \cos(y) - \cos(x^2 y^2) (2xy) + xe^{xy}$$

(\*)

To find  $\sin(20)$  and  $\cos(20)$ , we need to first find the hypotenuse of the triangle.

$$1^2 + 5^2 = c^2$$



$$26 = c^2 \rightarrow c = \sqrt{26}$$

Therefore (6) tells us

$$\sin(20) = \frac{\text{opp}}{\text{hyp}} = \frac{5}{\sqrt{26}}$$

$$= \frac{5\sqrt{26}}{26}$$

$$= \frac{10}{26} = \frac{5}{13}$$