

# Ans. Key

## Math 2551 A1-3 Exercise 11

Section:

Name:

Student ID:

Let  $f(x, y, z)$  be a function defined in the whole real space,  $g(x) = f(x, 1, 2)$  and  $h(x, y) = f(x, y, 2)$ . Mark true or false for each of the following statements.

True

(1)  $g'(3) = \frac{\partial f}{\partial x}(3, 1, 2)$  if the partial derivative exists.

$$g'(3) = \frac{d}{dx} \{f(x, 1, 2)\} \Big|_{x=3} = \frac{\partial f}{\partial x}(3, 1, 2)$$

True

(2)  $\frac{\partial h}{\partial y}(3, 1) = \frac{\partial f}{\partial y}(3, 1, 2)$  if the partial derivatives exist.

$$\begin{aligned} \frac{\partial h}{\partial y}(3, 1) &= \frac{d}{dy} \{h(3, y)\} \Big|_{y=1} = \frac{d}{dy} \{f(3, y, 2)\} \Big|_{y=1} \\ &= \frac{\partial f}{\partial y}(3, 1, 2) \end{aligned}$$