

$$\blacksquare \; f(x,y,z) = x^3 - 2y^2 + z^2$$

$$\blacksquare \; f : \mathbb{R}^3 \rightarrow \mathbb{R}$$

$$1. \; f(x,y,z) = 0 \wedge p = (1,1,1) \; QvQ \; \exists x = \phi(y,z)$$

$$f(1,1,1) \stackrel{?}{=} 0$$

$$1-2+1=0 \qquad \checkmark$$

$$x = \sqrt[3]{2y^2 - z^2}$$

$$f_x = 3x^2 \Rightarrow f_x(1) = 3$$

$$f_y = -4y \Rightarrow f_x(1) = -4$$

$$f_z = 2z \Rightarrow f_x(1) = 2$$

$$2. \qquad \blacksquare \; \frac{\partial \phi}{\partial y}(1,1) \stackrel{TFI}{=}$$

$$-\frac{-4}{3} = \frac{4}{3}$$

$$\blacksquare \; \frac{\partial \phi}{\partial z}(1,1)$$

$$-\frac{2}{3} = -\frac{2}{3}$$