

$$10. \quad g(x, y) = 7 - x^3 - 2y^2 \quad (1, 0, 6)$$

$$g_x(x, y) = -3x^2$$

$$g_y(x, y) = -4y$$

$$g_x(1, 0) = -3(1)^2 \\ = \boxed{-3}$$

$$g_y(1, 0) = -4(0) \\ = \boxed{0}$$

$$11. \quad w = \sqrt[3]{3x^2 - y^2 + 5z^4} \\ = (3x^2 - y^2 + 5z^4)^{\frac{1}{3}}$$

$$\frac{\partial w}{\partial x} = \frac{1}{3}(3x^2 - y^2 + 5z^4)^{\frac{1}{3}-1} \cdot 6x \\ = 2x(3x^2 - y^2 + 5z^4)^{-\frac{2}{3}}$$

$$= \boxed{\frac{2x}{(3x^2 - y^2 + 5z^4)^{2/3}}}$$

$$\frac{\partial w}{\partial y} = \frac{1}{3}(3x^2 - y^2 + 5z^4)^{\frac{1}{3}-1} \cdot (-2y) \\ = \frac{1}{3}(3x^2 - y^2 + 5z^4)^{-\frac{2}{3}} (-2y)$$

$$= \boxed{\frac{-2y}{3(3x^2 - y^2 + 5z^4)^{2/3}}}$$

$$\frac{\partial w}{\partial z} = \frac{1}{3}(3x^2 - y^2 + 5z^4)^{\frac{1}{3}-1} \cdot 20z^3 \\ = \frac{1}{3}(3x^2 - y^2 + 5z^4)^{-\frac{2}{3}} \cdot 20z^3$$

$$= \boxed{\frac{20z^3}{3(3x^2 - y^2 + 5z^4)^{2/3}}}$$