1. (4 points) Find a unit vector normal to the surface given by

\[ z = x^2y^2 + y + 1 \]

at the point \((0, 0, 1)\).
2. (3 points) Find $\frac{\partial z}{\partial x}$ given that $e^{xyz} = 2$.

3. (3 points) The temperature in degrees Celsius on the surface of a metal plate is

$$T(x, y) = 20 - 4x^2 - y^2$$

where $x$ and $y$ are measured in centimeters. In what direction from the point $(2, -3)$ does the temperature increase most rapidly? What is this rate of increase?