1. Let $z = e^{x^2y}$, $x = \sqrt{uv}$, $y = 1/v$. Use a chain rule to find $z_x$ and $z_y$.

2. Find a unit vector in the direction of which $f(x, y, z) = \frac{x + z}{z - y}$ decreases most rapidly at $P(5, 7, 6)$, and find the rate of change of $f$ at $P$ in that direction.