Let $g(x, y, z) = (xyz, x^2 + y + z)$,

$f(x, y) = (x^2 + y^2, x - y)$, and

$X_0 = (1, 2, -1)$.

1. Find the derivative matrices f' and g'.

2. Use these to find $(f \circ g)'(X_0)$.