1. Given the function $f(z) = 2 + i\text{Re}z$ defined on the complex plane $\mathbb{C}$.

   (a) Determine all points of continuity of $f$.

   (b) Determine all points at which the function $f$ is differentiable.

   (c) Determine all points at which the function is analytic.
2. Let $f(z)$ and $g(z)$ be entire functions. Decide which of the following statements are always true (that is for ALL the pair of entire functions given). For the true statement(s) find the derivative of the given function in terms of the derivatives of $f$ and $g$. For the false statement(s) show a counterexample, that is find $g$ and $f$ entire but the given combination is NOT.

(a) $f(z)^2 g(z)$ is entire. □ TRUE □ FALSE

(b) $g(z)/f(z)$ is entire. □ TRUE □ FALSE

(c) $f(g(z^2))$ is entire. □ TRUE □ FALSE