Given \( f : A \to B \) and \( g : B \to C \), let \( h = g \circ f \). Determine which of the following statements are true. Give proofs for the true statements and counterexamples for the false ones.

1. If \( h \) is injective, then \( f \) is injective.

2. If \( h \) is injective, then \( g \) is injective.

3. If \( h \) is surjective, then \( f \) is surjective.

4. If \( h \) is surjective, then \( g \) is surjective.