9. [12 points] Suppose \( w(x) \) is an everywhere differentiable function which satisfies the following conditions:

- \( w'(0) = 0 \).
- \( w'(x) > 0 \) for \( x > 0 \).
- \( w'(x) < 0 \) for \( x < 0 \).

Let \( f(t) = t^2 + bt + c \) where \( b \) and \( c \) are positive constants with \( b^2 > 4c \). Define \( L(t) = w(f(t)) \).

a. [2 points] Compute \( L'(t) \). Your answer may involve \( w \) and/or \( w' \) and constants \( b \) and \( c \).

b. [4 points] Using your answer from (a), find the critical points of \( L(t) \) in terms of the constants \( b \) and \( c \).

c. [6 points] Classify each critical point you found in (b). Be sure to fully justify your answer.