Finding Min/Max points for a function \( f(x) \):

1. Find the **critical points** of \( f(x) \): Compute \( f'(x) \) and find the points \( c \) where either:
   
   a. ___________________.
   
   b. ___________________.

2. For every critical point \( c \), you can tell if it’s a **local min or max** by one of these tests:
   
   a. **First Derivative Test** If \( c \) is a critical point, and if \( f \) is continuous at \( c \), then \( c \) is a:
      
      i. Local MAX if \( f' \) switches from ______________ to ___________.
      
      ii. Local min if \( f' \) switches from ______________ to ___________.
      
      iii. *neither*, if \( f' \) does not change sign at \( c \).
   
   b. **Second Derivative Test** If \( f'(c)=0 \) and \( f'' \) is **continuous** near \( c \), then \( c \) is:
      
      i. Local MAX if \( f''(c) \) ________________
      
      ii. Local min if \( f''(c) \) ________________
      
      iii. The test **FAILS** (is *inconclusive*), if \( f''(c) =0 \)
          
          [\( c \) can be a local max/min, or an **inflection point** when \( f'' \) changes sign]

3. Once you have identifies all your local min/max points, you can determine the
   
   **absolute (global) minimum and maximum** (if any) by the following procedure
   
   a. Evaluate \( f \) at all the critical points.
   
   b. Evaluate \( f \) at all the closed endpoints of the domain, if any,
      
      or compute the limits at the open endpoints (or at infinity).
   
   c. Compare all the values you computed and determine your absolute max and min.

   **Note:** If the domain is ______________, and if the function is ______________,
   
   you’re guaranteed to have both an absolute min and an absolute max.
   
   Otherwise, you might or might not have any.