1. Set up a coordinate system and mark off a closed and bounded interval $[a, b]$ on the horizontal axis.

2. Draw the graph of a generic function $f$ for the interval $[a, b]$. You do not need to start with a formula for $f(x)$. Just draw any curve that passes the vertical line test.

3. Draw the secant line through the points $(a, f(a))$ and $(b, f(b))$. Find an expression for the slope of this secant line.

4. Is there some input in the interval $(a, b)$ for which the corresponding tangent line is parallel to the secant line through the points $(a, f(a))$ and $(b, f(b))$?

5. Repeat steps (1)–(4) with the goal of finding an interval $[a, b]$ and function $f$ for which the answer to the question in (4) is the opposite of the answer you got on the first pass.

6. What condition or conditions on the function $f$ will guarantee that the answer to the question in (4) is yes? Write your response in the form of an "if–then" statement.

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