

1. For each of the following statements, determine if they are true or false. If true, show or explain why it is true. If false, explain why or give a counterexample.

(a) If $f''(c) = 0$, then $f(x)$ has an inflection point at $x = c$.

(b) The line tangent to $f(x)$ at $x = a$ will only intersect the graph of $f(x)$ at one point.

(c) If $f(x)$ is a differentiable function, then $f(x)$ is a continuous function.

(d) If $f''(x) > 0$ on the interval (a, b) , then $f'(x) < 0$ on the interval (a, b) .

(e) If $f(x)$ is a polynomial, then it is differentiable for all x .

(f) If g is differentiable at $x = a$ and f is differentiable at $x = g(a)$, then $f \circ g$ is differentiable at $x = a$.