1. (2 points each) Circle "True" if the statement is *always* true. Otherwise, circle "False." No explanation is necessary.

(a) Let f be a continuous function on the interval $[1, 10]$ and differentiable on $(1, 10)$. Suppose that $f(5) = 3$ and $f(2) = 1$. Then there is a point c in the interval $(2, 5)$ so that $f'(c) = \frac{2}{3}$.

<p style="text-align:center">True   False</p>

(b) If $g(x) = \frac{1}{f(x)}$, then $g'(x) = -\frac{1}{[f'(x)]^2}$.

<p style="text-align:center">True   False</p>

(c) If a is a local maximum for the function f on the interval $[2, 50]$, then $f'(a) = 0$.

<p style="text-align:center">True   False</p>

(d) If $g(x) = f^{-1}(x)$, then $g'(x) = (-1)f^{-2}(x)$.

<p style="text-align:center">True   False</p>

(e) The 100th derivative of $f(x) = x^5 + e^{2x}$ at $x = 0$ is 2^{100}.

<p style="text-align:center">True   False</p>

(f) If $f(x) = (x-1)(x-2)(x-3)(x-4)(x-5)(x-6)$, then $f'(x) = (x-1) + (x-2) + (x-3) + (x-4) + (x-5) + (x-6)$.

<p style="text-align:center">True   False</p>

(g) If f is continuous on $[a, b]$, then f has a global maximum and a global minimum on that interval.

<p style="text-align:center">True   False</p>