

7. [10 points] For each of the following statements, circle True if the statement is always true and circle False otherwise. No justification is necessary.

Recall the following definitions:

A function f is *even* if $f(-x) = f(x)$ for all x .

A function f is *odd* if $f(-x) = -f(x)$ for all x .

- a. [2 points] If $f(x)$ is an odd function and the tangent line to the graph of $f(x)$ at $x = 2$ is $y = 4(x - 2) + 7$, then the tangent line to the graph of $f(x)$ at $x = -2$ is $y = -4(x + 2) - 7$.

True False

- b. [2 points] If $g''(x) = 2^x(x - 4)(x + 5)^2$, then $g(x)$ has inflection points at $x = 4$ and $x = -5$.

True False

- c. [2 points] If $h(x)$ is an even function and $\int_{-3}^8 h(x) dx = 17$, then $\int_{-8}^3 h(x) dx = 17$.

True False

- d. [2 points] If $\int_3^7 p(t) dt = -5$, then $\int_{-1}^3 p(t - 4) dt = -5$.

True False

- e. [2 points] If $f(x)$ is a function such that $f''(x)$ is continuous, $f'(3) > 0$, and $f''(3) < 0$, then $f(3 + \Delta x) \leq f(3) + f'(3)\Delta x$ for all sufficiently small values of Δx .

True False