

Concavity

A curve that can hold water being poured into is concave up and one cup that can't is concave down.
If $f''(x)$ is positive for an x value, then $f(x)$ is concave up at that point.

Second Derivative Test—tells whether extrema is relative max/min. Plug all the critical numbers in that occur when $f'(x)=0$ or is undefined into $f''(x)$. If the result is positive, the critical number is a relative minimum or $f(x)$. If result is negative, it's a relative max. If $f''(x)$ no conclusion can be drawn, and you must resort to 1st Derivative wiggle graph.



Even/Odd Functions
A function is even if its domain $\rightarrow x$ is also in its domain
and $f(-x) = f(x)$ for all x in its domain, such as $f(x) = x^2$
A function is odd if its domain $\rightarrow x$ is also in its domain
and $f(-x) = -f(x)$ for all x in its domain, such as $f(x) = x^3$

• All inflection points have a second derivative of zero if it exists, but not all points with a second derivative of 0 are inflection points.

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