Graphing with Derivatives	
Test for Increasing and Decreasing Functions	1. If $f'(x) > 0$, then f is increasing (slope up) ↗ 2. If $f'(x) < 0$, then f is decreasing (slope down) ↘ 3. If $f'(x) = 0$, then f is constant (zero slope) →
The First Derivative Test	1. If $f'(x)$ changes from – to + at *c*, then f has a *relative minimum* at *(c, f(c))* 2. If $f'(x)$ changes from + to - at *c*, then f has a *relative maximum* at *(c, f(c))* 3. If $f'(x)$, is + *c* + or - *c* -, then $f(c)$ is neither
The Second Deriviative Test Let *f '(c)*=0, and *f "(x)* exists, then	1. If $f''(x) > 0$, then f has a relative minimum at $(c, f(c))$ 2. If $f''(x) < 0$, then f has a relative maximum at $(c, f(c))$ 3. If $f''(x) = 0$, then the test fails (See 1^{st} derivative test)
Test for Concavity	1. If $f''(x) > 0$ for all x, then the graph is concave up ∪ 2. If $f''(x) < 0$for all x, then the graph is concave down ∩
Points of Inflection Change in concavity	If $(c, f(c))$ is a point of inflection of $f(x)$, then either 1. $f''(c) = 0$ or 2. $f''(x)$ does not exist at *x* = *c*