Keeping Special Points and Properties of Functions Straight

Math 1210

Type	Form	Relations	Example Sentence
Critical Point	$(a, f(a))$	$(a, f(a))$ is on the graph of f, so a is in the domain of f. $f'(a) = 0$, $f'(a)$ does not exist, or... a is called a critical number and $f(a)$ is called a critical value.	The critical points of $f(x) = x^2 - x + 2$ are $(0, 2)$ and $(1, 2)$.
Increasing/decreasing function	$f(x)$ is increasing/decreasing on (a, b).	If $f(x)$ is differentiable on (a, b), then • $f'(x) > 0$ on $(a, b) \implies f$ is increasing on (a, b). • $f'(x) < 0$ on $(a, b) \implies f$ is decreasing on (a, b). • $f'(x) = 0$ on $(a, b) \implies f$ is constant on (a, b).	$f(x) = 3x^4 - 4x^3 - 12x^2 + 5$ is increasing on $(-\infty, 0)$ and $(2, \infty)$ and decreasing on $(0, 2)$.
Relative extrema	A function has a relative extrema at $x = c$. The relative extrema		