Curve sketching and analysis

$y = f(x)$ must be continuous at each:

critical point: $\frac{dy}{dx} = 0$ or undefined.

local minimum: $\frac{dy}{dx}$ goes (-,0,+) or

(-,und,+) or $\frac{d^2y}{dx^2} > 0$

local maximum: $\frac{dy}{dx}$ goes (+,0,-) or

(+,und,-) or $\frac{d^2y}{dx^2} < 0$

Absolute Max/Min.: Compare local extreme values to values at endpoints.

pt of inflection : concavity changes.

$\frac{d^2y}{dx^2}$ goes (+,0,-),(-,0,+),

(+,und,-), or (-,und,+)

Curve sketching and analysis

$y = f(x)$ must be continuous at each:

critical point: $\frac{dy}{dx} = 0$ or undefined OR at endpoints

local minimum:

$\frac{dy}{dx}$ goes (–,0,+) or (–,und,+) or $\frac{d^2y}{dx^2} > 0$

local maximum:

$\frac{dy}{dx}$ goes (+,0,–) or (+,und,–) or $\frac{d^2y}{dx^2} < 0$

point of inflection: concavity changes

$\frac{d^2y}{dx^2}$ goes from (+,0,–), (–,0,+), (+,und,–), or (–,und,+)