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Day 21 is Monday, March 11, 2013

Today continuing Section 5-1.

Goal: develop analytical tools that correlate behavior of graph of f and behavior of sign of f !

Local Extrema

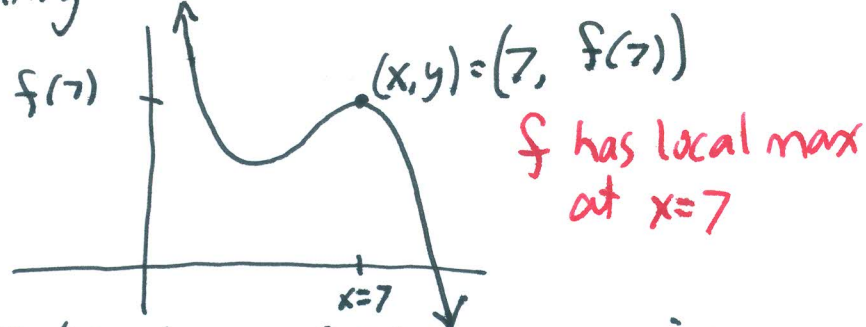
Definition of Local Max (or "Relative Max")

Words: f has a local max at $x=c$.

meaning: for all x values near c , but not equal to c ,
 $f(c) > f(x)$.

graphical interpretation

On a graph of f , the point $(x,y) = (c, f(c))$ is the highest point nearby



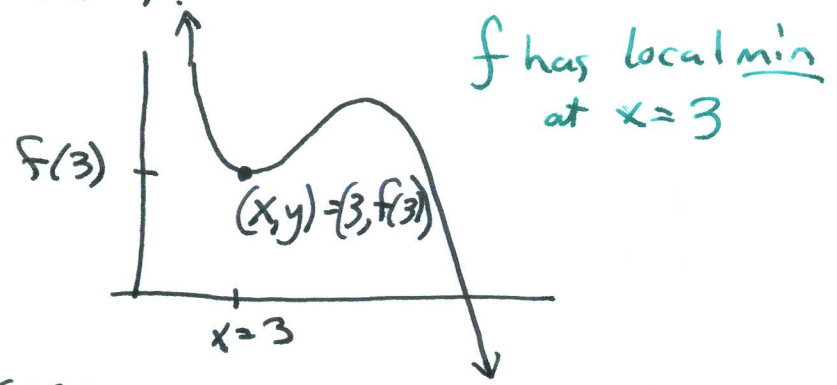
Notice: For the inequality to be true, $f(c)$ must exist.

Similar Definition for Local Min

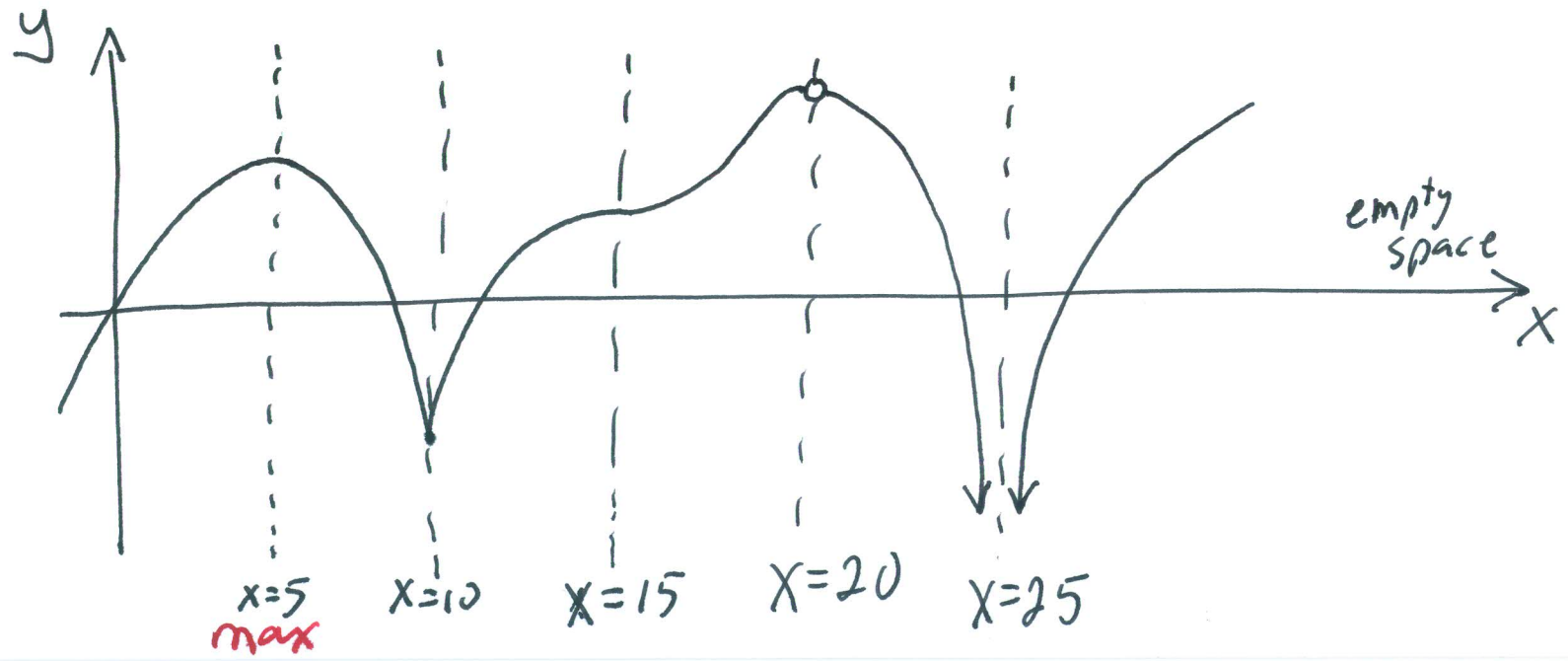
words: f has local min at $x=c$

meaning: for all x values near c , but not equal to c ,

$$f(c) < f(x)$$



Sample graph for coming discussion



Question: What are the x -coordinates of all ~~the~~ local maxs or local mins?

Local max at $x=5$

Not a local max at $x=20$ because graph has no y -value there.

Local min at $x=10$

Not a local min at $x=25$ because no y -value.

Goal: Develop an analytic test that will determine where a function f has local max or min.

