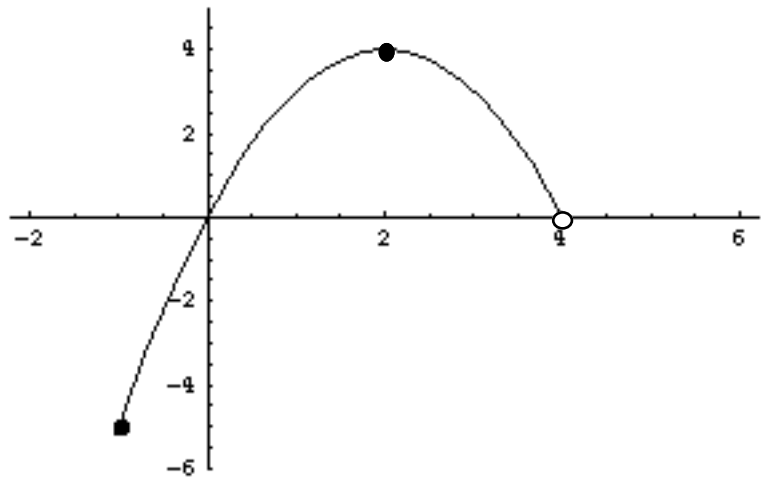
§ 3.3 Properties of Functions

	Increasing = Decreasing = Constant =

Increasing Function: A function where as x-values increase so do the y-values.
(Note: graph will rise up to the right)

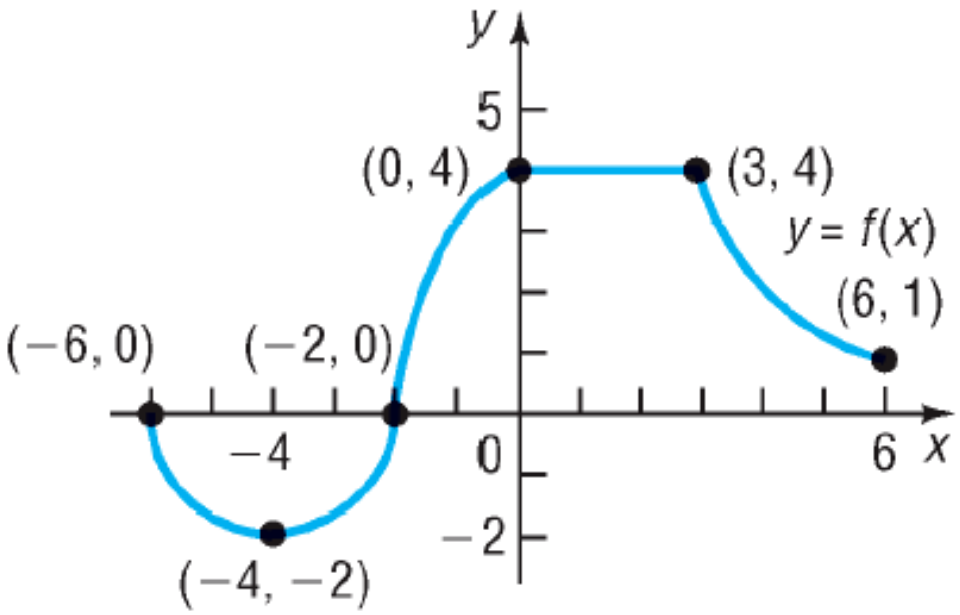
Example: Graph $y = 2x + 5$

Decreasing Function: A function where as x-values increase y-values decrease.
(Note: graph will fall down to the right)

Example: Graph $y = -x + 4$

Constant function: The graph is a flat horizontal line.

Example: Graph $y = 3$

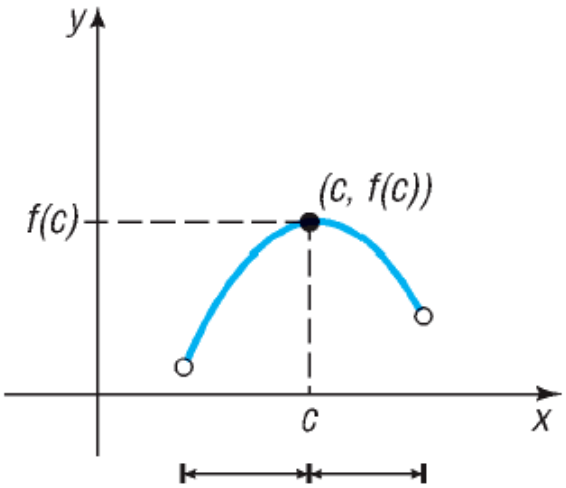


Where is the function increasing?

Where is it decreasing?

Where is it constant?

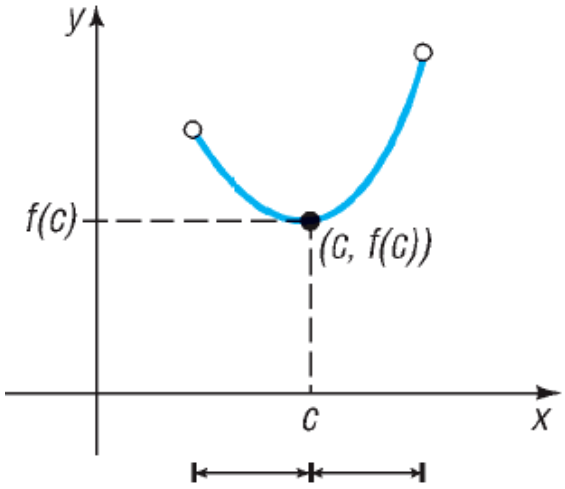
LOCAL MAXIMA



increasing decreasing

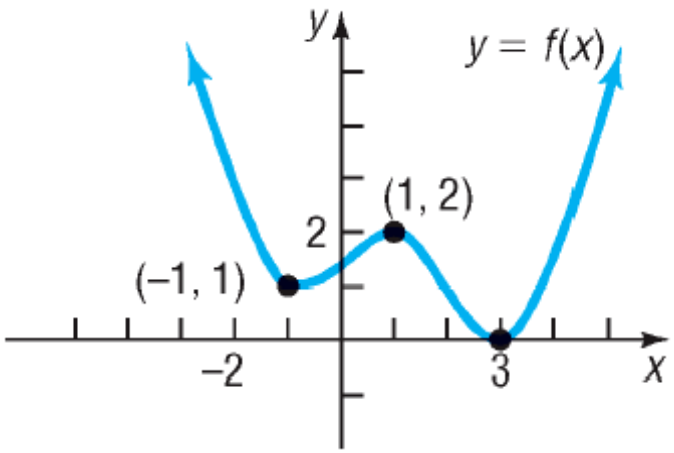
The local maximum is $f(c)$ and occurs at $x = c$.

LOCAL MINIMA



decreasing increasing

The local minimum is $f(c)$ and occurs at $x = c$.



a) At what number(s), if any, does f have a local maximum?

b) What are the local maxima?

c) At what number(s), if any, does f have a local minimum?

d) What are the local minima?

e) List the intervals on which f is increasing. List the intervals on which f is decreasing.