

## Local Extrema on an Interval

p. 278 - 286 (4.3)

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Let  $c$  be an interior point of the domain of the function  $f$ . Then  $f(c)$  is a:

**local (relative) maximum value** if  $f(x) \leq f(c)$  for all  $x$  in some open interval containing  $c$ .

**local (relative) minimum value** if  $f(x) \geq f(c)$  for all  $x$  in some open interval containing  $c$ .

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Using the graphs of the following functions, determine the

a) relative (local) maximum value(s)

b) relative (local) minimum value(s)

1.  $f(x) = \frac{9(x^2 - 3)}{x^3}$

local max value of 2  
local min value of -2

2.  $y = |x|$



rel. min value of 0 @  $x=0$   
no max.

3.  $y = x + \left(\frac{3}{2}\right)\sin x$  for the interval  $(-10, 10)$

local max values: -2.865, 3.419, 9.702

local min values: -3.419, 2.865, -9.702