Math 141 - Calculus Name___________________
Section 4.3 Video Worksheet

Extreme Values of Functions

Let f be a function with Domain D,

Absolute max and mins are called

Extreme Value Theorem -

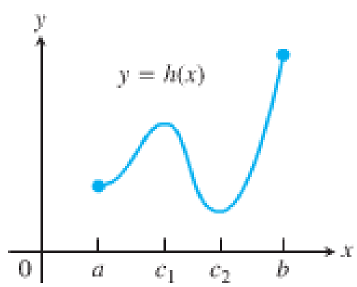
First Derivative Theorem for local extreme values (also known as relative extrema)

Critical Point -

How to find absolute extrema of a continuous function on a finite closed interval

Only places extreme can occur are

1.



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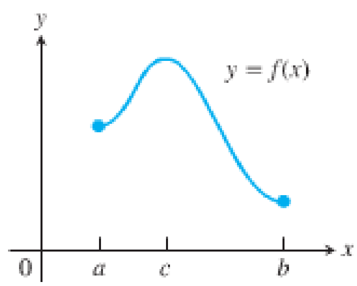
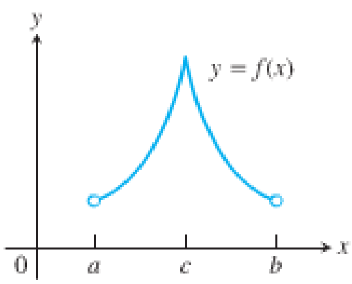


1)

2)

3.



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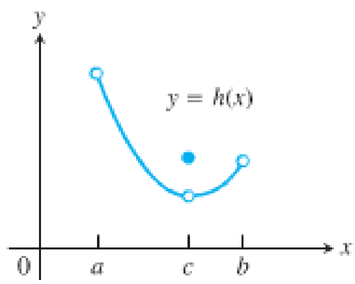

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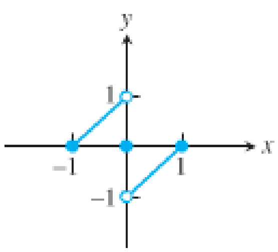

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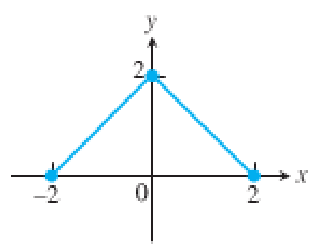

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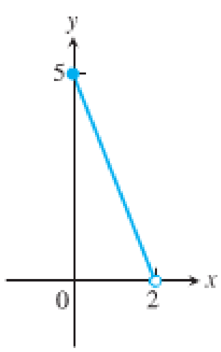

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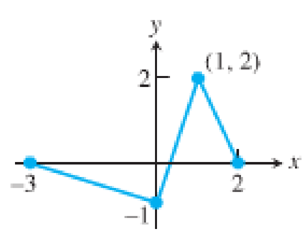


9)

10)

11.

x	$f'(x)$
a	0
b	0
c	5

12.

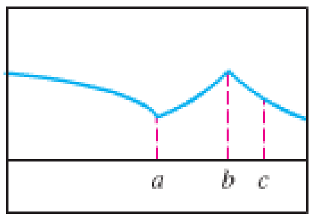
x	$f'(x)$
a	0
b	0
c	-5

13.

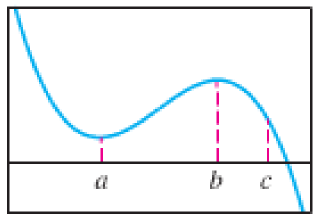
x	$f'(x)$
a	does not exist
b	0
c	-2

14.

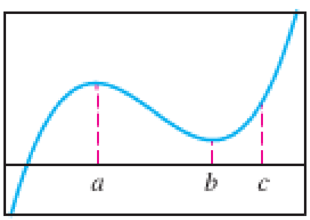
x	$f'(x)$
a	does not exist
b	does not exist
c	-1.7



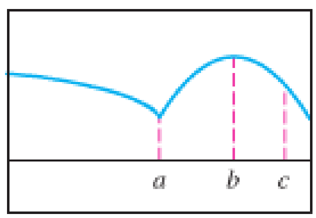
(a)



(b)



(c)



(d)

1. $f(x) = -x - 4 \qquad -4 \le x \le 1$

2. $f(x) = 4 - x^2 \qquad -3 \le x \le 1$

3. $f(x) = |t-5| \qquad 4 \le t \le 7$

4. $y = x^3 - 2x + 4$

5. $y = \sqrt{3 + 2x - x^2}$

6. $y = \begin{cases} 3 - x & x < 0 \\ 3 + 2x - x^2 & x \ge 0 \end{cases}$