

Identify local and absolute extrema

1

What is the min/max y-value of a function with this range?

$$(-\infty, 3]$$

A

Min: -4

B

Max: -4

C

Max: -0.5

D

Max: 3

2

What are the critical numbers (x-values) of the function?

$$f(x) = -2x^3 - 6x^2 - 1$$

$$f'(x) = -6x^2 - 12x$$

$$f''(x) = -12x - 12$$

A

$$x = -1$$

B

$$x = -2, 0$$

C

$$x = -2, -1, 0$$

D

$$x = -2$$

3

What are the critical points of the function?

$$f(x) = -2x^3 + 12x^2 - 18x + 2$$

$$f'(x) = -6x^2 + 24x - 18$$

$$f''(x) = -12x + 24$$

A

$$(1, 0) \text{ and } (3, 0)$$

B

$$(1, 2) \text{ and } (3, -6)$$

C

$$(2, -2)$$

D

$$(1, -6) \text{ and } (3, 2)$$

4

What are the critical points of the extrema (maxima or minima)?

$$f(x) = -2x^3 + 6x^2 + 18x - 3$$

$$f'(x) = -6x^2 + 12x + 18$$

A

$$(-1, 51) \text{ and } (3, -13)$$

B

$$(-1, -13) \text{ and } (3, 51)$$

C

$$(-1, 0) \text{ and } (3, 0)$$

D

$$(1, 19)$$

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What are the critical values (y-values) of the extrema (maxima or minima)?

$$f(x) = -2x^3 - 6x^2 + 18x + 2$$

$$f'(x) = -6x^2 - 12x + 18$$

A

$$y = -20$$

B

$$y = -52, 12$$

C

$$y = -52$$

D

$$y = -3, 1$$

6

What are the critical numbers (x-values) of the extrema (maxima or minima)?

$$f(x) = 2x^3 + 6x^2 - 3$$

A

$$x = -1$$

B

$$x = -2$$

C

$$x = -2, -1, 0$$

D

$$x = -2, 0$$

7

What are the critical points of the function?

$$f(x) = -2x^3 + 18x^2 - 48x - 2$$

A

$$(2, 0) \text{ and } (4, 0)$$

B

$$(3, -38)$$

C

$$(2, -34) \text{ and } (4, -42)$$

D

$$(2, -42) \text{ and } (4, -34)$$

8

What is the absolute minimum on the interval? Give the point.

$$f(x) = -2x^3 + 6x - 4$$

$$f'(-1) = 0, f'(1) = 0$$

$$\text{on } [-2, 3]$$

A

$$(-1, -8)$$

B

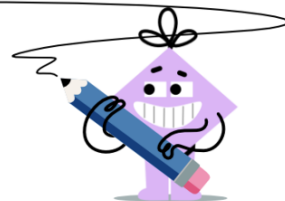
$$(1, 0)$$

C

$$(-2, 0)$$

D

$$(3, -40)$$



Identify local and absolute extrema

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What are the critical values (y-values) of the extrema (maxima or minima)?

$$f(x) = -2x^3 - 6x^2 - 1$$

A $y = -5$

B $y = -2, 0$

C $y = -9, -1$

D $y = -9$

10

What are the extreme values (y-values) on the interval?

$$f(x) = -2x^3 + 12x^2 + 2$$

on $[-1, 5]$

A Maximum value 68, minimum value 2

B Maximum value 66, minimum value 0

C Maximum value 66, minimum value 2

D Maximum value 2, minimum value 66

11

What is the absolute minimum point?

$$f(x) = 2x^3 - 18x^2 + 48x + 2$$

on $[1, 6]$

A $(6, 74)$

B $(2, 42)$

C $(1, 34)$

D $(4, 34)$

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What is the critical number (x-value) of the absolute minimum?

$$f(x) = -2x^3 - 18x^2 - 48x - 3$$

on $[-6, 0]$

A 1

B 2

C -1

D 0

13

What is the absolute maximum value (y-value)?

$$f(x) = -2x^3 + 18x^2 - 48x + 3$$

on $[1, 6]$

A -27

B -28

C -29

D -30

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Using the chart, is $x = 3$ a maximum, a minimum, or neither?

Interval	$f'(x)$	$f''(x)$
$(-\infty, 1)$	+	-
$(1, 2)$	-	-
$(2, 3)$	-	+
$(3, \infty)$	+	+

A Minimum

B Neither

C Maximum

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Using the chart, is it true that $x = 2$ is a minimum?

Interval	$f'(x)$	$f''(x)$
$(-\infty, 2)$	+	-
$(2, 3)$	-	-
$(3, 4)$	-	+
$(4, \infty)$	+	+

A No

B Yes

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Is $x = -2$ a maximum, a minimum, or neither?

$$f(x) = 2x^3 + 6x^2 - 1$$
$$f'(-2) = 0$$

A Neither

B Minimum

C Maximum