



Determine intervals where a function is increasing or decreasing

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$f''(2) = 24.$

- A The function is increasing there.
- B The function is decreasing there.
- C The function is concave up there.
- D The function is concave down there.

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At $x = -3$, the function is concave up.

- A $f''(x)$ is positive there
- B $f'(x)$ is positive there
- C $f''(x)$ is negative there
- D $f'(x)$ is negative there

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Increasing on $(-\infty, 1)$ and $(3, \infty)$; decreasing on $(1, 2)$ and $(2, 3)$.

A

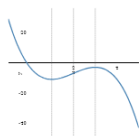
Interval	$f'(x)$	$f''(x)$
$(-\infty, 1)$	-	-
$(1, 2)$	+	-
$(2, 3)$	+	+
$(3, \infty)$	-	+

B

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

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On which interval(s) is the first derivative positive?



- A $(-\infty, 1)$
- B $(1, 2) \cup (2, 3)$
- C $(1, 2)$
- D $(-\infty, 1) \cup (3, \infty)$

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On the interval $(-3, 0)$, is the slope positive or negative?

$$f(x) = 2x^3 - 54x + 3$$

$$f'(x) = 6x^2 - 54$$

- A Can't be determined
- B Negative
- C Positive



Determine intervals where a function is increasing or decreasing

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On the interval $(-\infty, -2)$, is $f'(x)$ positive, negative, or zero?

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

A Negative

B Zero

C Can't be determined

D Positive

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On the interval $(2, \infty)$, is the slope positive or negative?

$$f(x) = 2x^3 - 24x - 4$$

A Can't be determined

B Positive

C Negative

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On which interval(s) is the function decreasing?

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

A $(-1, 1) \cup (1, \infty)$

B $(-\infty, -3) \cup (1, \infty)$

C $(-3, -1) \cup (-1, 1)$

D $(-\infty, -3) \cup (-3, -1)$

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On which interval(s) is the function increasing?

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

A $(-3, -2) \cup (-2, -1)$

B $(-2, -1) \cup (-1, \infty)$

C $(-\infty, -3) \cup (-3, -2)$

D $(-\infty, -3) \cup (-1, \infty)$

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Which derivative chart is correct for the interval $(-3, 0)$?

$$f(x) = -2x^3 + 54x + 4$$

A

Interval	$f'(x)$	$f''(x)$
$(-\infty, -3)$	-	+
$(-3, 0)$	-	-
$(0, 3)$	+	-
$(3, \infty)$	-	-

B

Interval	$f'(x)$	$f''(x)$
$(-\infty, -3)$	-	+
$(-3, 0)$	+	+
$(0, 3)$	+	-
$(3, \infty)$	-	-