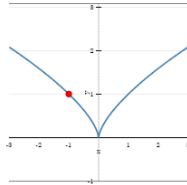




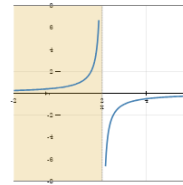
Sketch curves using derivative information

- 1** At the highlighted point, is $f'(x)$ positive, negative, or zero?



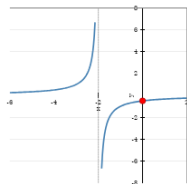
A Zero B Negative C Positive D Can't be determined

- 2** In the highlighted interval, is $f''(x)$ positive, negative, or zero?



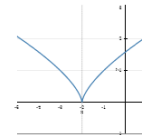
A Positive B Zero C Can't be determined D Negative

- 3** At the highlighted point, what are the signs of the slope and the concavity?



A Slope negative, concavity positive B Slope positive, concavity zero C Slope positive, concavity positive D Slope positive, concavity negative

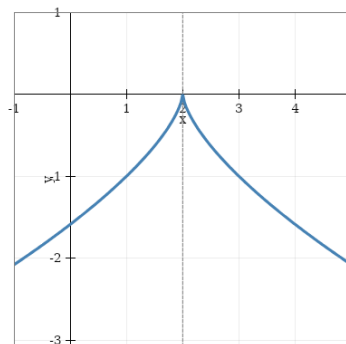
- 4** On which interval(s) is the first derivative negative?



A $(-2, \infty)$

B $(-\infty, -2)$

- 5** Which derivative chart matches this graph?



A

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

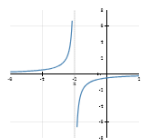
B

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



Sketch curves using derivative information

- 6** On which interval(s) is the second derivative negative?



A $(-2, \infty)$

B $(-\infty, -2)$

- 7** On which interval(s) is the function decreasing?

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

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

B $(2, 3) \cup (3, \infty)$

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

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

- 8** Using the chart, is it true that $x = -1$ is a minimum?

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

A Yes

B No

- 9** Using the chart, is $x = -2$ a maximum, a minimum, or neither?

Interval	$f'(x)$	$f''(x)$
$(-\infty, -2)$	+	-
$(-2, 0)$	-	-
$(0, 2)$	-	+
$(2, \infty)$	+	+

A Neither

B Maximum

C Minimum

- 10** What are the critical points of the function?
 $f(x) = -2x^3 + 18x^2 - 48x - 2$

A $(3, -38)$

B $(2, -42)$ and $(4, -34)$

C $(2, -34)$ and $(4, -42)$

D $(2, 0)$ and $(4, 0)$

- 11** On the interval $(3, \infty)$, is $f'(x)$ positive, negative, or zero?
 $f(x) = -2x^3 + 12x^2 - 18x$

A Negative

B Positive

C Zero

D Can't be determined



Sketch curves using derivative information

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Which derivative chart matches this function?

$$f(x) = 2x^3 + 6x^2 - 18x + 4$$

A

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

B

Interval	$f'(x)$	$f''(x)$
$(-\infty, -5)$	+	-
$(-5, -2)$	-	-
$(-2, 1)$	-	+
$(1, \infty)$	+	+

13Which derivative chart is correct for the interval $(-2, -1)$?

$$f(x) = 2x^3 + 12x^2 + 18x - 4$$

A

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

B

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