On what interval(s) is $f(x) = -x^3 + 3x^2 + 9x - 2$ increasing?

On what interval(s) is $f(x) = x^3 + 3x^2 - 5$ decreasing?

Find the inflection point of $f(x) = x^3 - 3x^2 - 2$.

On what interval is $f(x) = -x^3 - 9x^2 - 24x + 6$ concave up?

Find the local maximum value of $f(x) = -x^3 + 9x^2 - 15x - 2$.

Find the critical numbers of $f(x) = x^3 - 6x^2 - 15x + 3$.

Find the local maximum value of $f(x) = x^3 + 3x^2 - 24x - 8$.

On what interval(s) is $f(x) = -x^3 - 6x^2 - 9x - 1$ increasing?

Derivative Tests: Critical Points & Concavity · 2

ANSWER

$-2 < x < 0$

Derivative Tests: Critical Points & Concavity · 1

ANSWER

$-1 < x < 3$

Derivative Tests: Critical Points & Concavity · 4

ANSWER

$x < -3$

Derivative Tests: Critical Points & Concavity · 3

ANSWER

$(1, -4)$

Derivative Tests: Critical Points & Concavity · 6

ANSWER

$x = -1$ or $x = 5$

Derivative Tests: Critical Points & Concavity · 5

ANSWER

23

Derivative Tests: Critical Points & Concavity · 8

ANSWER

$-3 < x < -1$

Derivative Tests: Critical Points & Concavity · 7

ANSWER

72

Derivative Tests: Critical Points & Concavity · 9

On what interval(s) is $f(x) = 2x^3 + 6x^2 - 18x + 4$ increasing?

Derivative Tests: Critical Points & Concavity · 10

On what interval(s) is $f(x) = -x^3 - 3x^2 + 24x + 6$ decreasing?

Derivative Tests: Critical Points & Concavity · 11

On what interval is $f(x) = x^3 - 9x^2 + 15x - 2$ concave down?

Derivative Tests: Critical Points & Concavity · 12

$f(x) = -x^3 + 12x + 4$ has a critical number at $x = 2$. Use the second derivative test: is it a local maximum or a local minimum?

Derivative Tests: Critical Points & Concavity · 13

Find the point where $f(x) = -x^3 + 12x^2 - 45x - 2$ has a local minimum.

Derivative Tests: Critical Points & Concavity · 14

Find the inflection point of $f(x) = -x^3 + 9x^2 - 24x + 7$.

Derivative Tests: Critical Points & Concavity · 15

$f(x) = -x^3 + 6x^2 + 3$ has a critical number at $x = 4$. Use the second derivative test: is it a local maximum or a local minimum?

Derivative Tests: Critical Points & Concavity · 16

On what interval(s) is $f(x) = -2x^3 + 18x^2 - 30x - 7$ decreasing?

Derivative Tests: Critical Points & Concavity · 10

ANSWER

x < -4 or x > 2

Derivative Tests: Critical Points & Concavity · 9

ANSWER

x < -3 or x > 1

Derivative Tests: Critical Points & Concavity · 12

ANSWER

maximum

Derivative Tests: Critical Points & Concavity · 11

ANSWER

x < 3

Derivative Tests: Critical Points & Concavity · 14

ANSWER

(3, -11)

Derivative Tests: Critical Points & Concavity · 13

ANSWER

(3, -56)

Derivative Tests: Critical Points & Concavity · 16

ANSWER

x < 1 or x > 5

Derivative Tests: Critical Points & Concavity · 15

ANSWER

maximum

Derivative Tests: Critical Points & Concavity · 17

On what interval(s) is $f(x) = -x^3 + 12x$ increasing?

Derivative Tests: Critical Points & Concavity · 18

On what interval(s) is $f(x) = 2x^3 - 24x^2 + 90x - 8$ decreasing?

Derivative Tests: Critical Points & Concavity · 19

On what interval is $f(x) = -x^3 - 3x^2 - 4$ concave down?

Derivative Tests: Critical Points & Concavity · 20

$f(x) = -2x^3 + 6x^2 + 48x - 6$ has a critical number at $x = 4$. Use the second derivative test: is it a local maximum or a local minimum?

Derivative Tests: Critical Points & Concavity · 21

Find the point where $f(x) = 2x^3 + 6x^2 - 48x + 10$ has a local minimum.

Derivative Tests: Critical Points & Concavity · 22

Find the inflection point of $f(x) = x^3 + 6x^2 + 9x + 7$.

Derivative Tests: Critical Points & Concavity · 23

Find the point where $f(x) = -2x^3 + 18x^2 - 48x - 9$ has a local minimum.

Derivative Tests: Critical Points & Concavity · 24

Find the inflection point of $f(x) = -2x^3 + 6x^2 + 48x - 10$.

Derivative Tests: Critical Points & Concavity · 18

ANSWER

$3 < x < 5$

Derivative Tests: Critical Points & Concavity · 17

ANSWER

$-2 < x < 2$

Derivative Tests: Critical Points & Concavity · 20

ANSWER

maximum

Derivative Tests: Critical Points & Concavity · 19

ANSWER

$x > -1$

Derivative Tests: Critical Points & Concavity · 22

ANSWER

$(-2, 5)$

Derivative Tests: Critical Points & Concavity · 21

ANSWER

$(2, -46)$

Derivative Tests: Critical Points & Concavity · 24

ANSWER

$(1, 42)$

Derivative Tests: Critical Points & Concavity · 23

ANSWER

$(2, -49)$