

The Secret of Calculus 4 5 Graphing Functions Without Using Any Calculator

Lesson 305 | Calculus AB | Extrema and derivative tests

<https://www.youtube.com/watch?v=jZXKiMntOfQ>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 147 \cdot x + 5$.

02 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 75 \cdot x + 7$.

03 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 147 \cdot x + 9$.

The Secret of Calculus 4 5 Graphing Functions Without Using Any Calculator

Lesson 305 | Calculus AB | Extrema and derivative tests

<https://www.youtube.com/watch?v=jZXKiMntOfQ>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

04

Find critical points, increasing/decreasing intervals, and concavity of $f(x) = x^3 - 300 \cdot x + 6$.

05

Find critical points, increasing/decreasing intervals, and concavity of $f(x) = x^3 - 48 \cdot x + 13$.

06

Find critical points, increasing/decreasing intervals, and concavity of $f(x) = x^3 - 300 \cdot x + 14$.

The Secret of Calculus 4 5 Graphing Functions Without Using Any Calculator

Lesson 305 | Calculus AB | Extrema and derivative tests

<https://www.youtube.com/watch?v=jZXKiMntOfQ>

Original practice aligned to the saved video title.

01 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 147 \cdot x + 5$.
 $f'=3(x^2-49)$, zero at ± 7 . Increasing $(-\infty, -7)$ and $(7, \infty)$; decreasing $(-7, 7)$. Local maximum $(-7, 691)$; local minimum $(7, -681)$. $f''=6x$: concave down $x < 0$, up $x > 0$; inflection $(0, 5)$.

02 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 75 \cdot x + 7$.
 $f'=3(x^2-25)$, zero at ± 5 . Increasing $(-\infty, -5)$ and $(5, \infty)$; decreasing $(-5, 5)$. Local maximum $(-5, 257)$; local minimum $(5, -243)$. $f''=6x$: concave down $x < 0$, up $x > 0$; inflection $(0, 7)$.

03 Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 147 \cdot x + 9$.
 $f'=3(x^2-49)$, zero at ± 7 . Increasing $(-\infty, -7)$ and $(7, \infty)$; decreasing $(-7, 7)$. Local maximum $(-7, 695)$; local minimum $(7, -677)$. $f''=6x$: concave down $x < 0$, up $x > 0$; inflection $(0, 9)$.

The Secret of Calculus 4 5 Graphing Functions Without Using Any Calculator

Lesson 305 | Calculus AB | Extrema and derivative tests

<https://www.youtube.com/watch?v=jZXXiMntOfQ>

Original practice aligned to the saved video title.

04

Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 300\cdot x + 6$.

$f'=3(x^2-100)$, zero at ± 10 . Increasing $(-\infty,-10)$ and $(10,\infty)$; decreasing $(-10,10)$. Local maximum $(-10,2006)$; local minimum $(10,-1994)$. $f''=6x$: concave down $x<0$, up $x>0$; inflection $(0,6)$.

05

Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 48\cdot x + 13$.

$f'=3(x^2-16)$, zero at ± 4 . Increasing $(-\infty,-4)$ and $(4,\infty)$; decreasing $(-4,4)$. Local maximum $(-4,141)$; local minimum $(4,-115)$. $f''=6x$: concave down $x<0$, up $x>0$; inflection $(0,13)$.

06

Find critical points, increasing/decreasing intervals, and concavity of $f(x)=x^3 - 300\cdot x + 14$.

$f'=3(x^2-100)$, zero at ± 10 . Increasing $(-\infty,-10)$ and $(10,\infty)$; decreasing $(-10,10)$. Local maximum $(-10,2014)$; local minimum $(10,-1986)$. $f''=6x$: concave down $x<0$, up $x>0$; inflection $(0,14)$.