The Second Derivative Test

Name _____

Date _____ Period _____

The Second Derivative Test

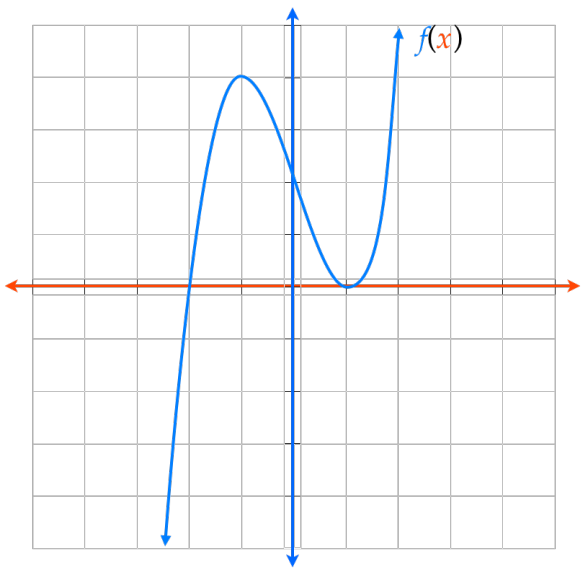
Let function f be a function such that $f'(c) = 0$ and the second derivative exists.

1. If $f''(c) > 0$, then f has a relative minimum at $(c, f(c))$.
2. If $f''(c) < 0$, then f has a relative maximum at $(c, f(c))$.

If $f''(c) = 0$, test fails. No Conclusion. Use the First Derivative Test.

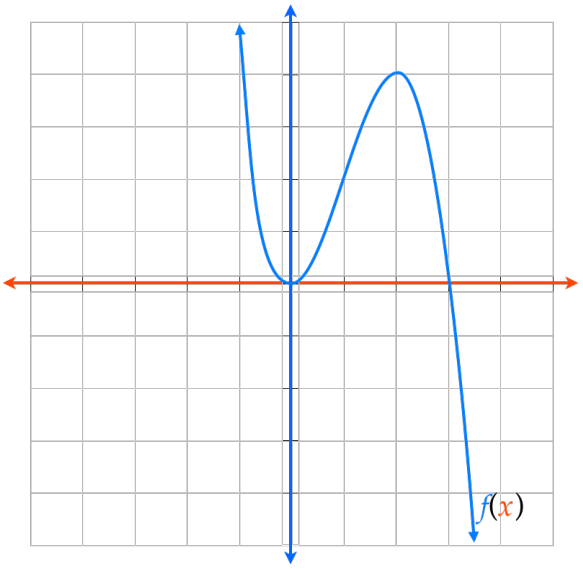
Use the second derivative test to find extrema.

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



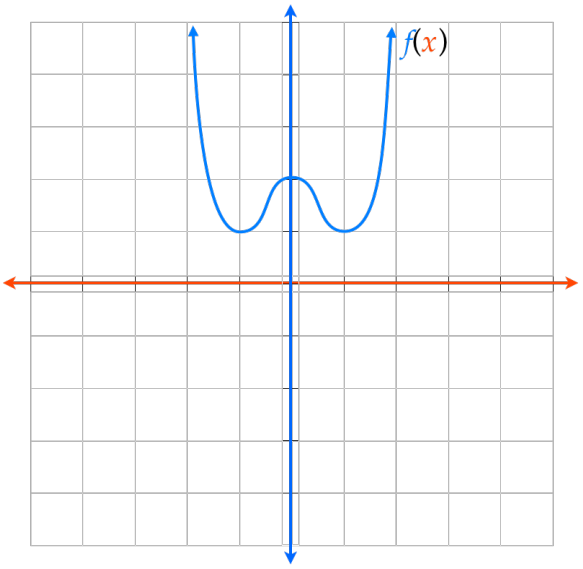
Use the second derivative test to find extrema.

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



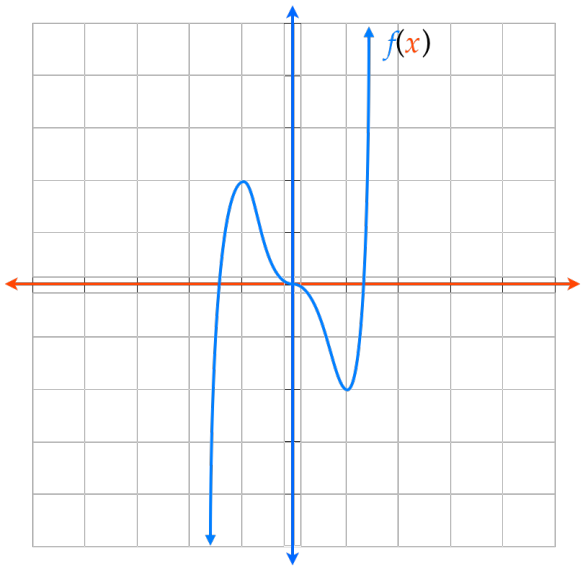
Use the second derivative test to find extrema.

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



Use the second derivative test to find extrema.

$f(x) = 3x^5 - 5x^3$



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