First Derivative Test

For finding local minimum and maximum

The First Derivative Test is a consequence of the Increasing/Decreasing Test (see my earlier video).

First Derivative Test:

Suppose that c is a critical number of a continuous function f:

(a) If f' changes from positive to negative at c, then f has a local maximum at c.

(b) If f' changes from negative to positive at c, then f has a local minimum at c.

(c) If f' does not change sign at c (for example, if f' is positive on both sides of c or negative on both sides), then f has no local maximum or minimum at c.

4 Scenarios: