3.3 Increasing/Decreasing Functions

★ What is the value of the derivative when a function is:

    a) Increasing $f'(x) > 0$ positive

    b) Decreasing $f'(x) < 0$ negative

    c) Constant $f'(x) = 0$ zero

★ ✳ First Derivative Test

Let c be a critical number of a function f that is continuous on an open interval containing c. If f is differentiable on the interval (except possibly c), then $f(c)$ can be classified as follows.

1) $f'(x)$ pos → neg, then rel max at
$$(c, f(c))$$

2) $f'(x)$ neg → pos, then rel min at
$$(c, f(c))$$

3) $f'(x)$ pos on both sides of c or neg on both sides of c, then ..$f(c)$ is neither a rel max nor min