

$f(x)$ is increasing if and only if...
$f(x)$ is decreasing if and only if...
$f(x)$ is concave up if and only if $f''(x) \dots$
$f(x)$ is concave down if and only if $f''(x) \dots$
$f(x)$ is concave down if and only if $f'(x) \dots$
$f(x)$ is concave up if and only if $f'(x) \dots$
$f(x)$ has an inflection point at $x = c$ if and only if $f''(x) \dots$
$f(x)$ has an inflection point at $x = c$ if and only if $f'(x) \dots$
First Derivative Test:
$f(x)$ has a relative minimum if and only if $f'(x) \dots$
$f(x)$ has a relative maximum if and only if $f'(x) \dots$
Second Derivative Test:
$f(x)$ has a relative minimum at $x = c$ because $f'(c) =$ and $f''(c)$
$f(x)$ has a relative maximum at $x = c$ because $f'(c) =$ and $f''(c)$