

Increasing/Decreasing Functions

p. 278 - 286 (4.3)

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Let f be a function defined on an interval I and let x_1 and x_2 be any two points in I , then:

a) f increases on I if $x_1 < x_2$ and $f(x_1) < f(x_2)$.

b) f decreases on I if $x_1 < x_2$ and $f(x_1) > f(x_2)$.

Let f be continuous on $[a, b]$ and differentiable on (a, b) .

1. If $f'(x) > 0$ (a, b) , then f is increasing for all x in $[a, b]$.

2. If $f'(x) < 0$ (a, b) , then f is decreasing for all x in $[a, b]$.

**1. The derivative g' of a function g is continuous and has 2 zeros. Selected values of g' are given in the table below. If the domain of g is the set of all real numbers, then g is decreasing on which intervals?

x	-4	-3	-2	-1	0	1	2	3	4
$g'(x)$	2	3	0	-3	-2	-1	0	3	2

For 2 - 3, identify the intervals on which $g(x)$ is increasing and/or decreasing. Justify your answer.

2. Graph $g(x) = x^4 - 8x^2 + 1$ and g' simultaneously on the calculator.

3.

