Section 2.2.1
Increasing and Decreasing Intervals


Intervals on which the slope is positive (line is rising,

left to right) are considered increasing.

Intervals on which the slope is negative (line is falling,

left to right) are considering decreasing.

Intervals on which the line is flat, slope is zero, are
considered constant.

All intervals are expressed with respect to x...the x-
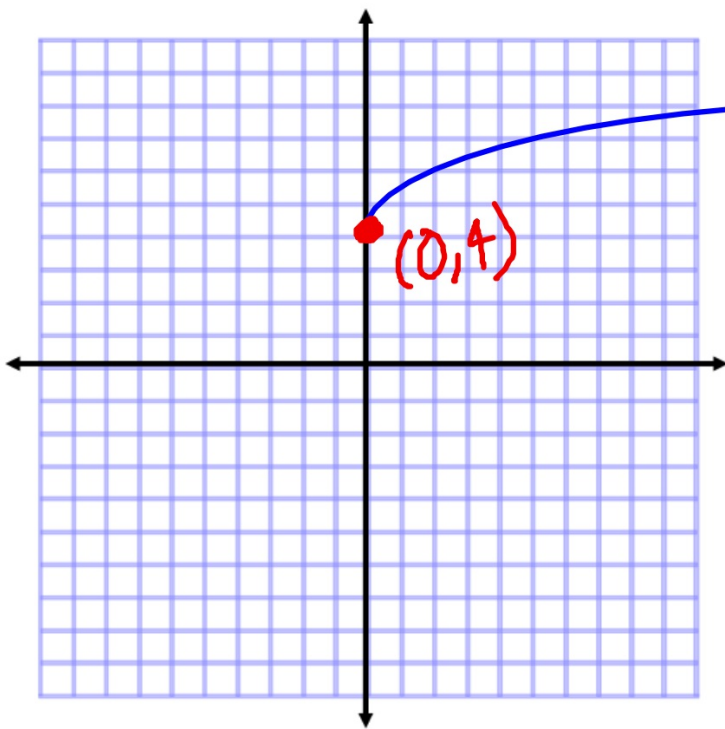values in which this is occuring.

Determine increasing, decreasing and constant intervals.
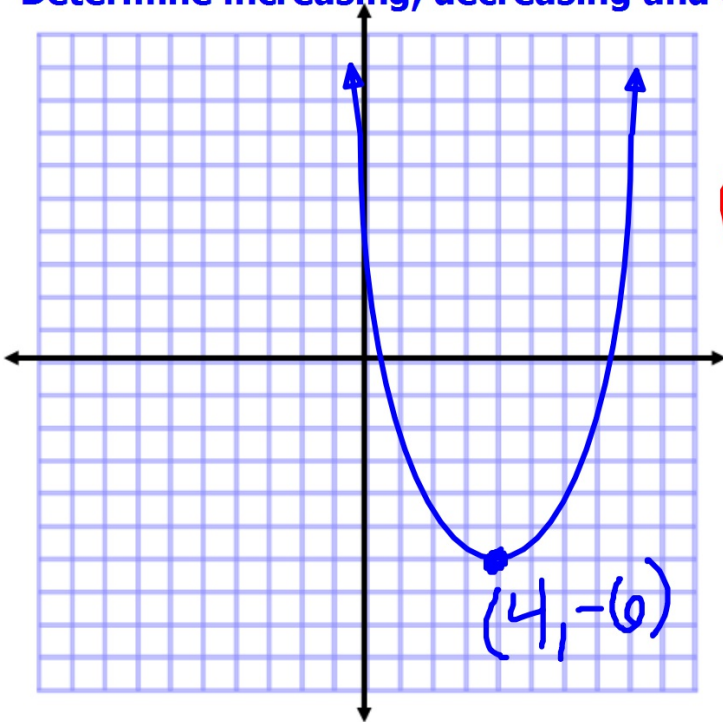
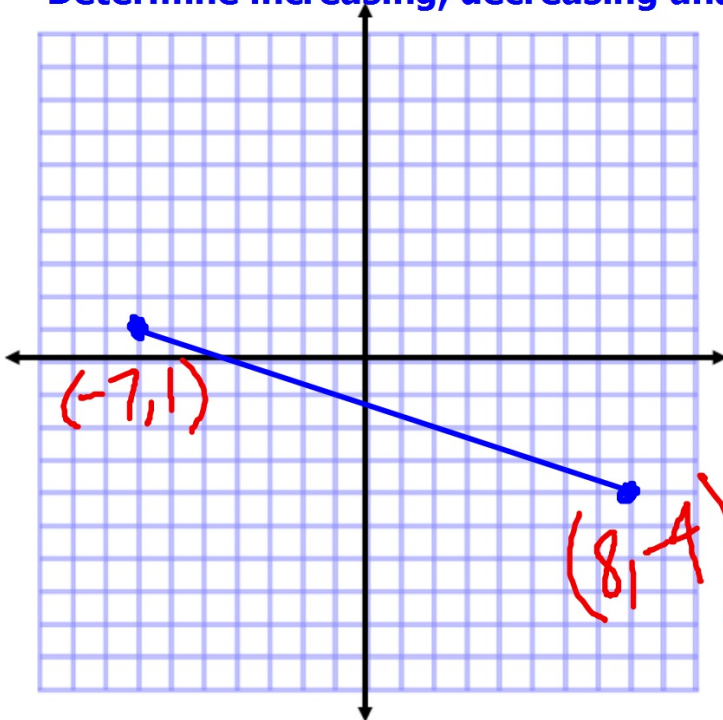$(-\infty, 4)$
is decreasing

$(4, \infty)$
is increasing

$(4, -6)$

Determine increasing, decreasing and constant intervals.
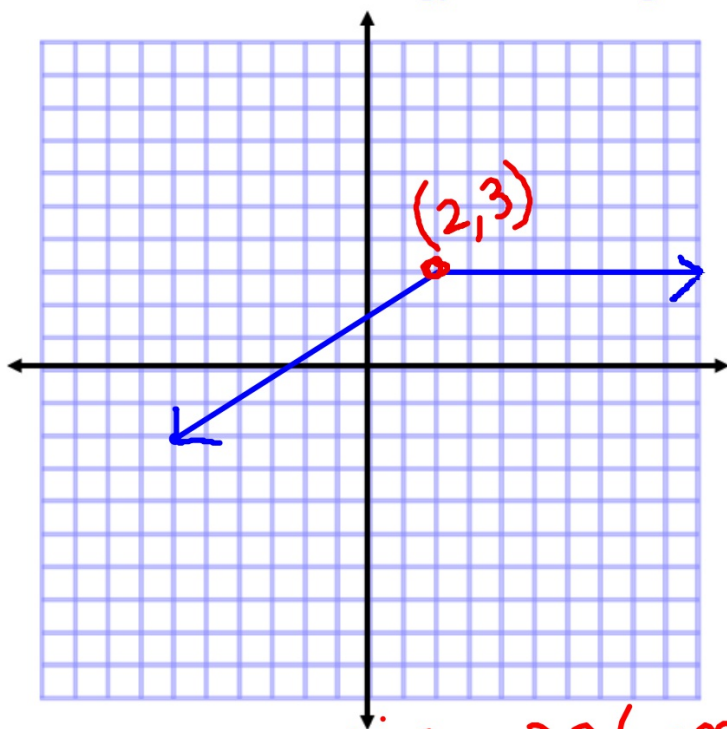
(0,4)

on $(0, \infty)$
it's
increasing

BTW
$\sqrt{x} + 4$

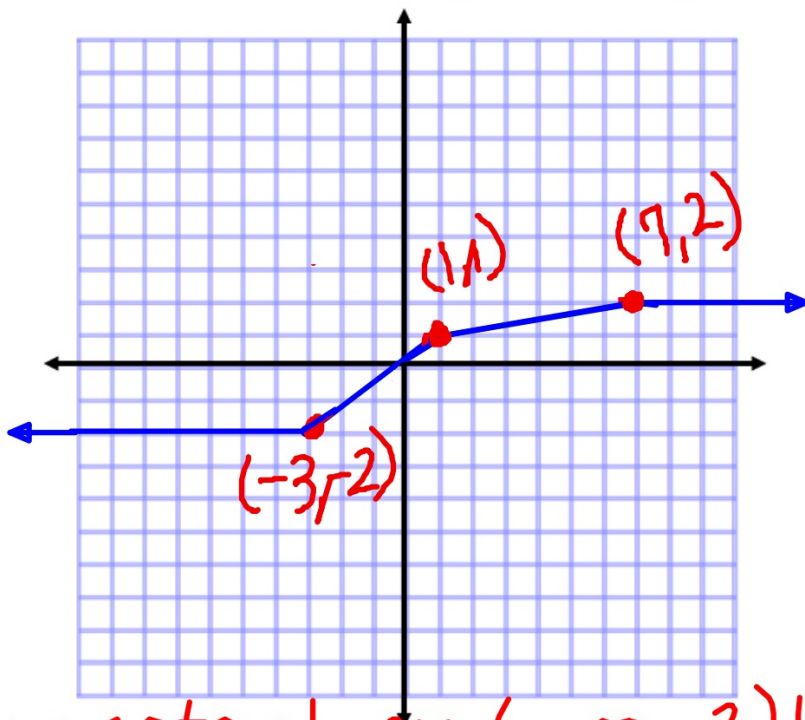**Determine increasing, decreasing and constant intervals.**

(−7,1)

(8,−4)

decreasing
on (−7, 8)

Determine increasing, decreasing and constant intervals.
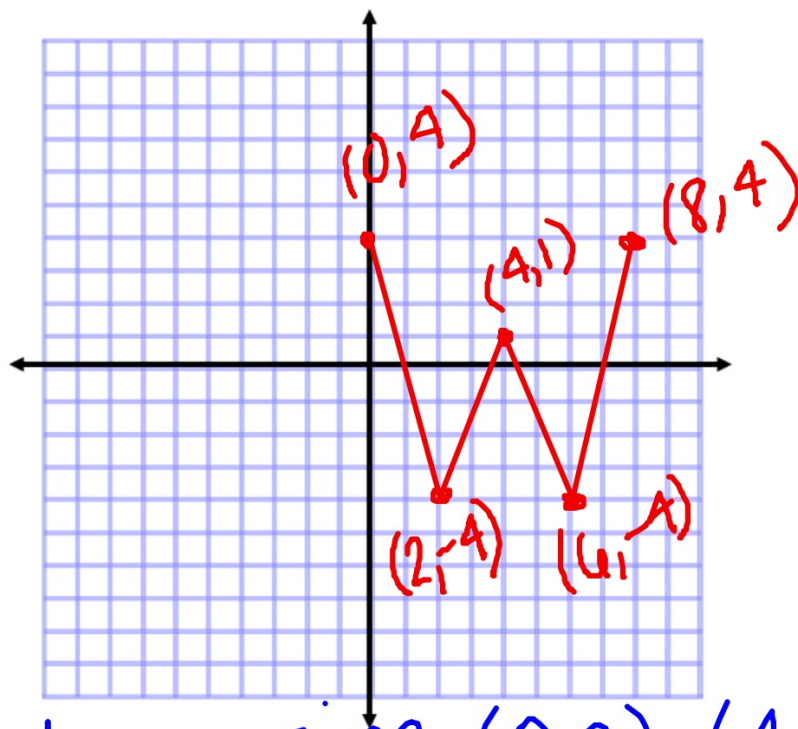
(2,3)

increasing on $(-\infty, 2)$
constant on $(2, \infty)$

Determine increasing, decreasing and constant intervals.

constant on $(-\infty, -3) \cup (7, \infty)$
increasing on $(-3, 7)$

Determine increasing, decreasing and constant intervals.

decreasing $(0,2) \cup (4,6)$
increasing on $(2,4) \cup (6,8)$

**Suggested Practice
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1. inc on (-1,∞)
   dec on (-∞,-1)

2. inc on (-∞,-1)
   dec on (-1,∞)

3. inc on (0,∞)
4. inc on (-1,∞)
5. dec on (-2,6)
6. inc on (-3,2)

7. inc (-∞,-1)
   constant (-1,∞)

8. constant on (-∞,0)
   inc on (0,∞)

9. inc on (-∞,0)u(1.5,3)
   dec on (0,1.5)u(3,∞)

10. inc on (-5,-4)u(-2,0)u(2,4)
    dec on (-4,-2)u(0,2)u(4,5)

11. constant on
    (-∞,-2)u(4,∞)
    increasing on
    (-2,4)

12. constant on
    (-∞,-4)u(2,∞)
    decreasing on
    (-4,2)