

AII.7 cdf 2009



•Find x and y intercepts

•Identify increasing, decreasing, constant intervals

Determine end behaviors

x and y intercepts

- The x intercept is where the graph crosses the x axis.
 - The y intercept is where the graph crosses the y axis.



x and y intercepts The x intercept is a point in the equation where the y-value is zero. Example: Find the x intercepts of $25x^2 + 4y^2 = 16$. Set y = 0, solve for x. $25x^2 + 4(0)^2 = 16$ $25x^2 = 16$ x intercepts: $\frac{25x^2}{25} = \frac{16}{25}$ $\left(\frac{4}{5},0\right)$ $\left(-\frac{4}{5},0\right)$ $x^2 = \frac{16}{25}$ $x = \pm \frac{4}{5}$

x and y intercepts The y intercept is a point in the equation where the x-value is zero. Example: Find the y intercepts of $25x^2 + 4y^2 = 16$. Set x = 0, solve for y. $25(0)^2 + 4y^2 = 16$ $4v^2 = 16$ y intercepts: $\frac{4y^2}{4} = \frac{16}{4}$ (0,-2) (0,2) $v^2 = 4$ $v = \pm 2$

A function f is increasing on an interval if as x increases, then f(x) increases.

A function f is decreasing on an interval if as x increases, then f(x) decreases.

A function f is constant on an interval if as x increases, then f(x) remains the same.

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f(x) is decreasing in the interval (-1,1).

f(x) is increasing in the intervals $(-\infty -1) \cup (1,\infty)$.

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Find the interval(s) over which the interval is increasing, decreasing and constant?

Answer Now

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f(x) is decreasing over the intervals $(-\infty - 1) \cup (5,\infty)$.

f(x) is increasing over the interval (3,5).

f(x) is constant over the interval (-1,3).

End Behavior of Functions

The end behavior of a graph describes the far left and the far right portions of the graph.

Using the leading coefficient and the degree of the polynomial, we can determine the end behaviors of the graph. This is often called the Leading Coefficient Test.

End Behavior of Functions

First determine whether the degree of the polynomial is even or odd.

$$f(x) = 2x^2 + 3x - 5$$
 degree = 2 so it is even

Next determine whether the leading coefficient is positive or negative.

$$f(x) = 2x^2 + 3x - 5$$
 Leading coefficient = 2
so it is positive



Degree: Even

Leading Coefficient: + End Behavior: Up Up \/







PRACTICE Give the End Behavior:

a.
$$f(x) = -2x^3 + 5x - 9$$

b. $f(x) = 4x^4 - 2x^2 + 6x - 3$
c. $f(x) = 4x^5 - 3x^2 + 2x$
d. $f(x) = -3x^4 + 2x^3 - x^2 + 3x - 4$

PRACTICE Give the End Behavior: **a.** $f(x) = -2x^3 + 5x - 9$ Up Down **b.** $f(x) = 4x^4 - 2x^2 + 6x - 3$ Up Up (c. $f(x) = 4x^5 - 3x^2 + 2x$ Down Up / d. $f(x) = -3x^4 + 2x^3 - x^2 + 3x - 4$ Down Down