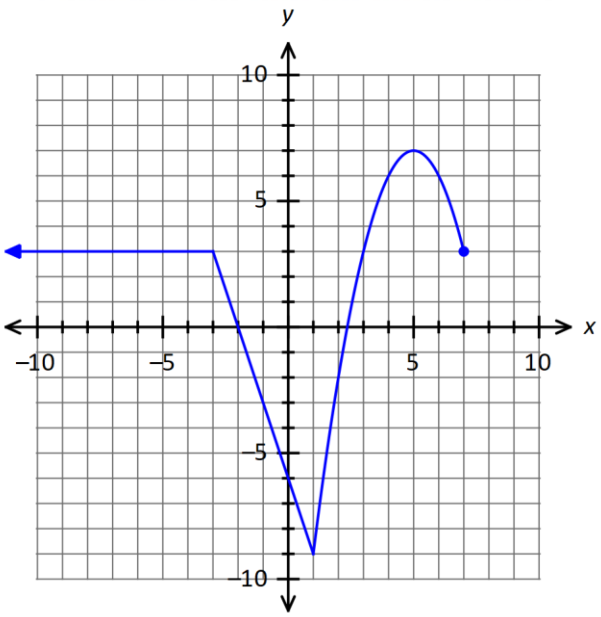
SM 3H

Date: Section:

Objective:

Analyze the graph



Domain:

Range:

x-intercept(s):

y-intercept:

Relative or local maximum point(s):

Relative or local maximum value(s):

Relative or local minimum point(s):

Relative or local minimum value(s):

Absolute maximum point(s):

Absolute maximum value(s):

Absolute minimum point(s):

Absolute minimum value(s):

Increase interval:

Decrease interval:

Constant interval:

Positive interval:

Negative interval:

Types of symmetry:

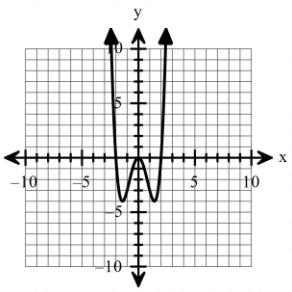
Symmetry:

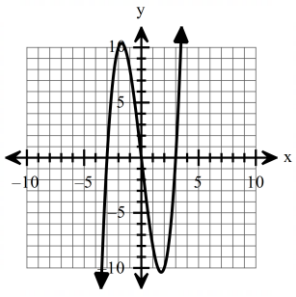
End behavior: $\lim_{x\to\infty} f(x) =$ $\lim_{x\to-\infty} f(x) =$

Find symmetry algebraically

Even---$f(x) = f(-x)$

Odd----$-f(x) = f(-x)$



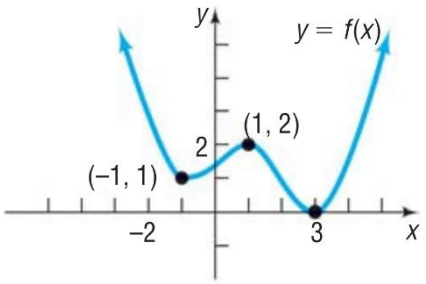


Example:

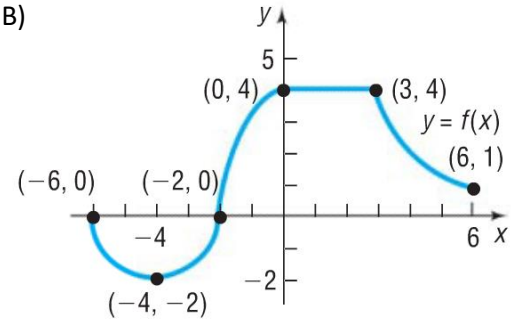
$f(x) = 2x^4 - 3x^2 + 4$

$f(x) = -2x^7 - 5x^5 + 7x^3 + 2$

A)



B)



a) At what number(s), if any, does f have a local maximum?

b) What are the local maxima?

c) At what number(s), if any, does f have a local minimum?

d) What are the local minima?

e) List the intervals where f is increasing and the intervals where f is decreasing.

f) List the intervals where f is positive and the intervals where f is negative.

Find the Average Rate of Change of a Function

To find the average rate of change of a function between any two points on its graph, calculate the slope of the line containing the two points.

If a and b, $a \neq b$, are in the domain of a function $y = f(x)$, the **average rate of change of *f*** from a to b is defined as:

Average rate of change = $\dfrac{\Delta y}{\Delta x} = \dfrac{f(b) - f(a)}{b - a} \quad a \neq b$

The symbol Δy above is "the change in y," and Δx is the "change in x." The average rate of change of f is the change in y divided by the change in x.

Example:

Find the average rate of change of $f(x) = 3x^2$ for the following intervals:

a) From 1 to 3 or [1, 3]

b) From 1 to 5 or [1, 5]

c) From 1 to 7 or [1, 7]

d)

Years	Cost
1	2
2	3
3	5
4	8
5	9

$[2, 5]$