Sunday, September 30, 2018
4:50 PM

KEY

Precalc 1.5C: Analyzing Graphs of Functions

Obj: to analyze graphs to det. increasing/decreasing intervals, relative min/max, identify zeros and if even/odd/neither

Hwk: Finish 1.5 Functions (Day 3) worksheet
1.5 VC on SEPARATE sheet of paper
1.4 - 1.5 Quiz on FRI 9/28 - graphing calcs needed

Do Now:

Determine if each function is ODD, EVEN, or NEITHER.
Do you see a pattern? How can you check?

a. $f(x) = x^2 - x^4$

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

$\boxed{\text{Even}}$

b. $g(x) = 2x^3 + 1$

$g(-x) = 2(-x)^3 + 1$
$= -2x^3 + 1$

$\boxed{\text{Neither}}$

c. $h(x) = 2 - x^6 - x^8$

$h(-x) = 2 - (-x)^6 - (-x)^8$
$= 2 - x^6 - x^8$
$= h(x)$

$\boxed{\text{Even}}$

d. $j(x) = x^5 - 2x^3 + x$

$j(-x) = (-x)^5 - 2(-x)^3 + (-x)$
$= -x^5 + 2x^3 - x$
$= -j(x)$

$\boxed{\text{ODD}}$

e. $k(x) = x^5 - 2x^4 + x - 2$

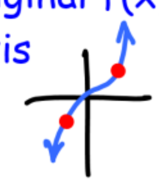
$k(-x) = (-x)^5 - 2(-x)^4 + (-x) - 2$
$= -x^5 - 2x^4 - x - 2$

$\boxed{\text{Neither}}$

One way to decide (ONLY w/ polynomial functions) -
EVEN - all even powers
ODD - all odd powers (with no constant)

Recap:

Odd function: $f(-x) = -f(x)$
i.e. $f(-x)$ gives EXACT OPPOSITE of original $f(x)$
sym. wrt origin - reflected over x & y axis



Even function: $f(-x) = f(x)$
i.e. $f(-x)$ gives EXACT original function
sym. wrt y-axis

Finishing up from yesterday:

Ex. 4) Determine whether $g(x) = -\frac{x}{x^2+1}$ is even, odd, or neither

Test: Find $g(-x)$

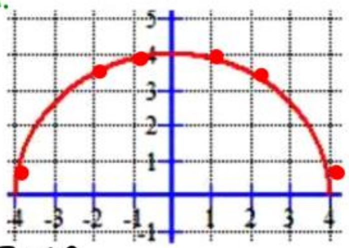
$$g(-x) = -\frac{(-x)}{(-x)^2+1} = \frac{x}{x^2+1} = -g(x)$$

$\boxed{\text{Since } g(-x) = -g(x) \text{ the function is ODD.}}$

$\therefore$ symmetric about the origin.

Ex. 5) Use the graph to determine if each is even, odd, or neither

a.

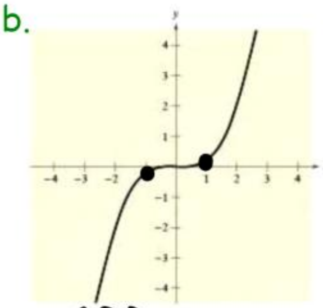


Even

* symmetric about y-Axis.

(x,y) $(-x,y)$

b.

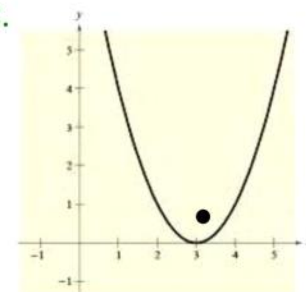


ODD

* symmetric about the origin.

(x,y) $(-x,-y)$

c.



Neither

* Not symmetric about y-Axis or origin.

Show Pierre the Mountain Climbing Ant!

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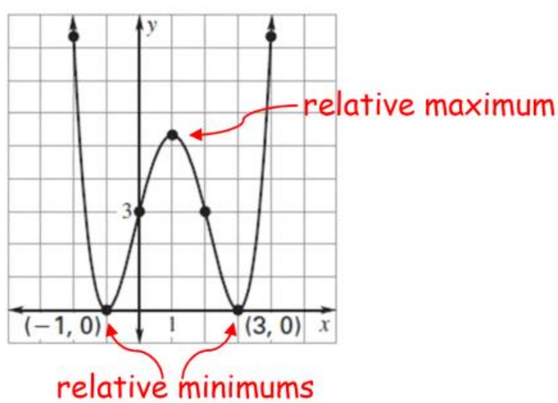
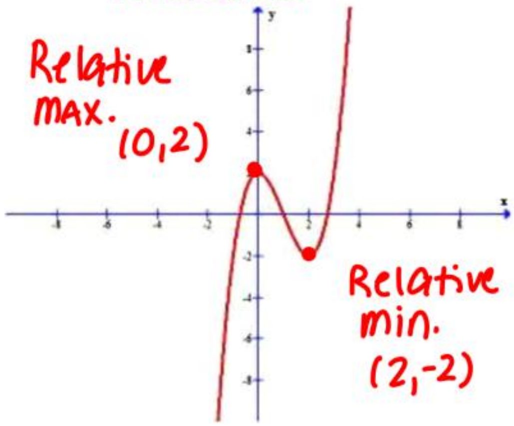
The turning point can also be a relative minimum or a relative maximum.

- *f(a)* is a **relative minimum** if the pt has the <u>lowest</u> y value in interval

- *f(a)* is a **relative maximum** if the pt has the <u>highest</u> y value in interval



Ex. 1) Use a graphing utility to approx. the relative maximum and/or relative minimum of the function $f(x) = x^3 - 3x^2 + 2$. Round to hundredths.



Get into assigned groups! Work on ODD problems. Finish worksheet for homework.

*Exit card at end of period.