Bellwork   Alg 2   Friday, October 25, 2019

1. Determine graphically if the following function is probably ODD, EVEN, or Neither

$$y = \frac{x}{x^2 - 16}$$

2. Determine numerically if the following function is probably ODD, EVEN, or Neither.
Show your work $y = -\sqrt{x^2 + 5}$

3. Determine algebraically if the following function is ODD, EVEN, or Neither.
Show your work $y = 10x^5 - 4x^3 + 12x$

4. Andy is going on a bike ride. The following equation models Andy's distance from home(miles) as a function of time (hrs): $f(x) = x^3 - 12x^2 + 36x$
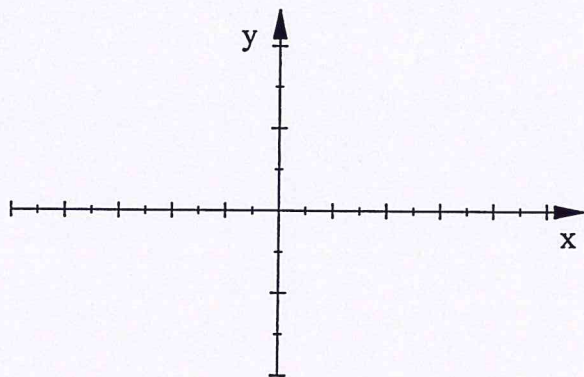a) Find Andy's average rate of change on the following interval and explain what it represents:
$0 \leq x \leq 1.5$

b) Find Andy's average rate of change on the following interval and explain what it represents:
$3 \leq x \leq 5$

Find a good window on the graphing calculator to get a good picture of this function and sketch it below:
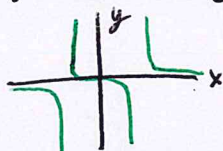

c) What is the farthest distance from home Andy gets before he turns around and comes back? How long does it take him to get to this point?

d) How long after he started his bike ride did Andy return to home?

1. Determine graphically if the following function is probably ODD, EVEN, or Neither

$y = \dfrac{x}{x^2 - 16}$

Graph appears to symmetry about the origin, therefore it appears to be **ODD**

2. Determine numerically if the following function is probably ODD, EVEN, or Neither.

Show your work $y = -\sqrt{x^2 + 5}$

X	Y
2	$-\sqrt{(2)^2 + 5} = -\sqrt{4+5} = -\sqrt{9} = -3$
-2	$-\sqrt{(-2)^2 + 5} = -\sqrt{4+5} = -\sqrt{9} = -3$

since $f(-x) = f(x)$ it appears this function is **EVEN**

3. Determine algebraically if the following function is ODD, EVEN, or Neither.

Show your work $y = 10x^5 - 4x^3 + 12x$

$f(-x) = 10(-x)^5 - 4(-x)^3 + 12(-x) = 10(-x^5) - 4(-x^3) + 12(-x) = -10x^5 + 4x^3 - 12x$

$= -(10x^5 - 4x^3 + 12x)$

since $f(-x) = -f(x)$ this function is **ODD** $\boxed{f(-x) = -f(x)}$

4. Andy is going on a bike ride. The following equation models Andy's distance from home(miles) as a function of time (hrs): $f(x) = x^3 - 12x^2 + 36x$

a) Find Andy's average rate of change on the following interval and explain what it represents:

$0 \le x \le 1.5$ $f(0) = 0$

$f(1.5) = 30.375$

AVG rate of change $= \dfrac{30.375 - 0}{1.5 - 0} = \boxed{20.25 \text{ mph away from home}}$

b) Find Andy's average rate of change on the following interval and explain what it represents:

$3 \le x \le 5$ $f(3) = 27$

$f(5) = 5$

AVG rate of change $= \dfrac{5 - 27}{5 - 3} = -11$ $\boxed{11 \text{ mph Back towards home}}$

Find a good window on the graphing calculator to get a good picture of this function and sketch it below:
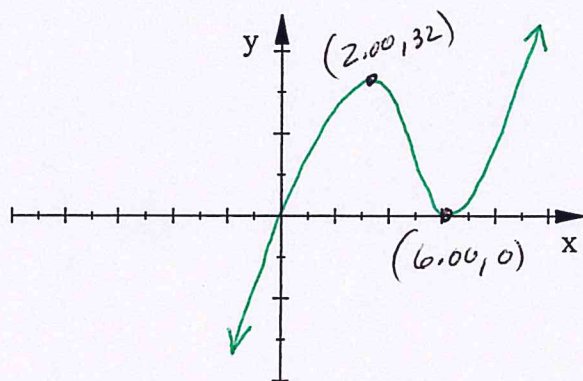
c) What is the farthest distance from home Andy gets before he turns around and comes back? How long does it take him to get to this point?

Relative Max is farthest from home

$\boxed{\text{Farthest from home} = 32 \text{ miles} \\ \text{time to this point} = 2 \text{ hrs}}$

d) How long after he started his bike ride did Andy return to home?

Relative Min is when Andy returns home (distance = 0)

$\boxed{\text{Time to return home} = 6 \text{ hrs}}$

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