

North South University

Department of Mathematics and Physics

Quiz 2

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Course No : MAT 116

Course Title : Precalculus

Section : 20

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Ans. to the ques. no. 01

a)

From the graph we get that,

$$f(0) = -1 \quad ; \text{ from the point } (0, -1)$$

$$f(-4) = 3 \quad ; \text{ from the point } (-4, 3)$$

$$f(4) = 3 \quad ; \text{ from the point } (4, 3)$$

$$f(2) = 1 \quad ; \text{ from the point } (2, 1)$$

b)

From the graph we get that,

$$f(-2) = 1 \quad ; \text{ which is } \text{positive} \text{ greater than } 0.$$

Thus  $f(-2)$  is positive

c)

From the graph we get that,

$$f(-4) = 3 \quad ; \text{ which is greater than } 0.$$

Thus  $f(-4)$  is positive.

d)

From the graph we get a point of  $(4, 3)$

$$\text{So, } f(4) = 3$$

Thus the value of  $x$  is 4.

e)

from the graph we get that

~~from value of~~

value of  $x$  from  $-1$  to  $1$ ,  $f(x) < 0$ .

Thus the interval of  $x$  is  $(-1, 1)$

f)

$$\text{Domain of } f = [-4, 4]$$

$$\text{Range of } f = [-1, 3]$$

g)

$$\text{Range of } f = [-1, 3]$$



h)

from the graph we get that,

x-intercept are,  $(-1, 0)$  and  $(1, 0)$

y-intercept is  $(0, -1)$

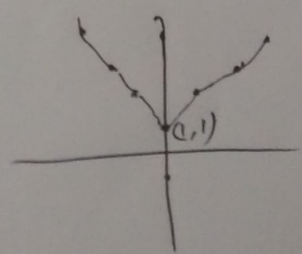
i)

From the graph we get that, the graph is symmetric with respect to the y-axis.

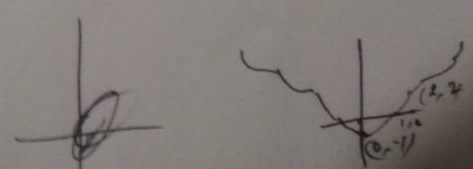
Thus the function is even.

j)

$y = f(x) + 2$ , the graph will be 2 unit up.



$y = 2 \cdot f(x)$  : graph will be bigger by 2 unit.



Ans. to the ques. no. 2

a)

Given that,

$$F(x) = x^4 + 8x^2 + 8$$

In order to test if the graph is even and odd

let us replace  $x$  by  $-x$ .

$$\textcircled{\times} F(-x) = (-x)^4 + 8 \cdot (-x)^2 + 8$$

$$= x^4 + 8x^2 + 8$$

$$= F(x)$$

Thus the function is even.

b)

Answer

b)

$$F(x) = x^4 + 8x + 8$$

Average rate of the function when  $x$  changes

to 2 to 5.

$$\Delta F = \frac{((5)^4 + 8 \cdot 5 + 8) - (2^4 + 8 \cdot 2 + 8)}{5 - 2}$$

$$= \frac{\cancel{2798} \quad 833 - 56}{3}$$

$$2 \quad 259$$

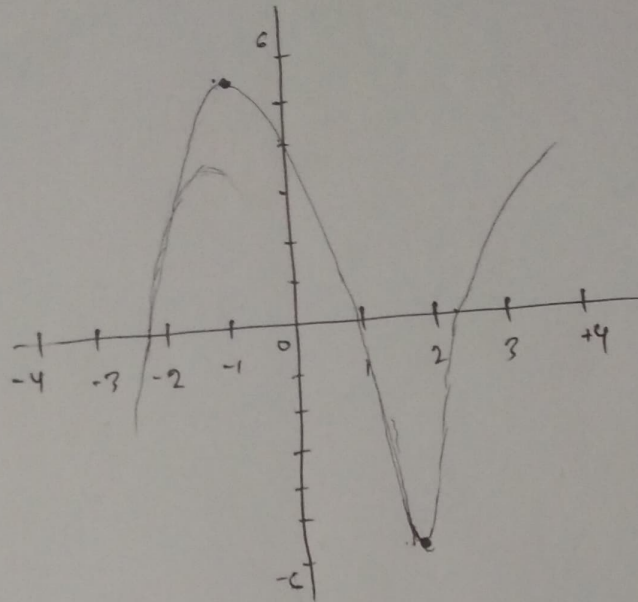
Thus the average rate of change is 259.



Ans. to the ques. no. 3

In a quadratic function, if ~~a~~  $a < 0$ , then the parabola will be opens down and the vertex will be the highest point. Thus the absolute maxima will be the y coordinate of the vertex and ~~local minimum~~ there is no absolute minimum, But there is a local minimum.

if.  $a > 0$ , then the parabola will be opens up. and the vertex will be the lowest point. Thus the y-coordinate of vertex is the absolute minimum and there is no absolute maximum. But, there is a local maxima.



There ~~sho~~ should be a local maximum  $(-1.3, 5.3)$   
 and a local minimum  $(1.3, -5.3)$

The function is increasing from  $(-2, -1.3)$  and  $(1.3, \infty)$

The function is decreasing from  $(-1.3, 1.3)$ .