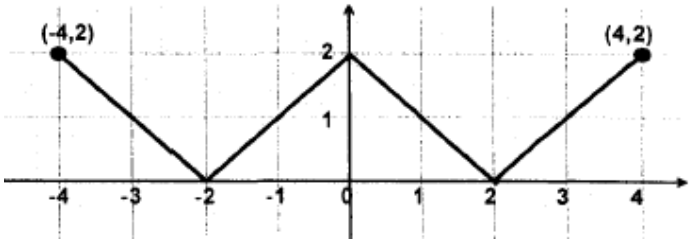
King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (131)
Recitation (2. 3)

Question 1. Suppose that the following is the graph of $f(x)$, then find



a. Domain of $f(x)$
b. Range of $f(x)$
c. At what interval the function is:
   i) increasing,
   ii) ii) decreasing

Answer:

(a): $D_f = \{x \mid -4 \le x \le 4\} = [-4,4]$

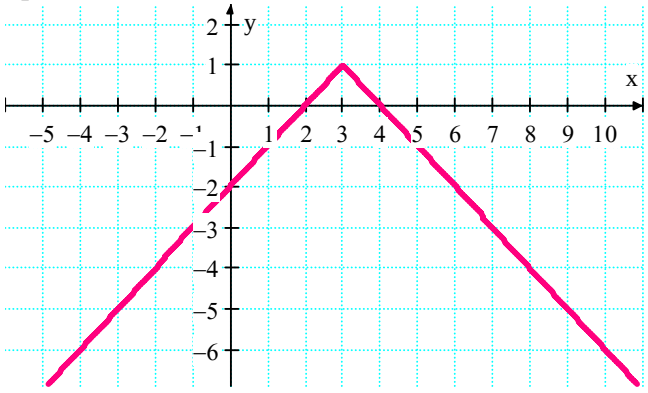
(b): $R_f = \{y \mid 0 \le y \le 2\} = [0,2]$

(c): **i)** increasing on $[-2,0], [2,4]$

ii) decreasing on $[-4,-2], [0,2]$

Question 2. If $f(x) = -|x-3|+1$

a) Find $f(-1)+f(-4)$
b) Find all x-intercepts and the y-intercept.
c) Give the domain and the range of *f.*



Answer:

a) $f(-1)+f(-4) = -9$

b) x-intercepts: $x = 2$, $x = 4 \Leftrightarrow (2,0)$, $(4,0)$
y-intercept: $y = -2 \Leftrightarrow (0,-2)$

c) $Domain = (-\infty,\infty)$, $Range = (-\infty,1]$

Question 3. Determine the domain, in interval notation, of the function: $f(x) = \dfrac{1}{\sqrt{x}-3}$.

Answer: $x \ge 0$ and $x \ne 9 \Rightarrow Domain = D_f = [0,9) \cup (9,\infty)$

Question 4. Identify the set of ordered pairs (x,y) or the equation that defines y as a function of x :

A) $y^2 = x^3 - 2x + 1$
B) $|y| = x + 5$
C) $y = 4 \pm \sqrt{5}$
D) $\sqrt[3]{y} = x^2 + 3$
E) $x - 5 = 0$

Answer: A) Not a Function. B) Not a Function. C) Not a Function. D) Yes, a Function. D) No.