## King Fahd University of Petroleum and Minerals
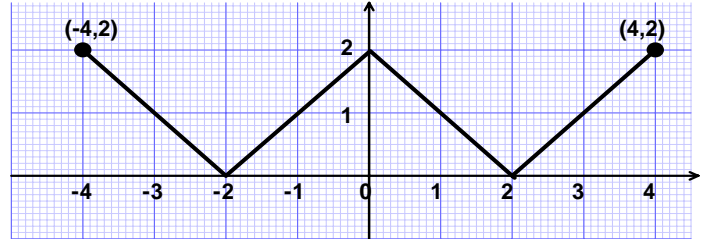## Prep-Year Math Program
## Math (001)-Term (141)
### Recitation (2. 3)

**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) decreasing
d. Does the graph represent a function?
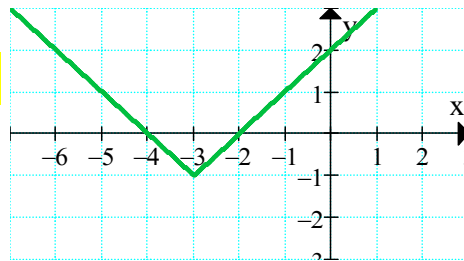


**Answer:**

**(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) $[-2, 0], [2, 4]$ ii) $[-4, -2], [0, 2]$

**(d):** Yes, it represents a function.

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

a) Find $f(-1)$.
b) Give the domain and the range of $f$.
c) Give the largest interval for which $f$ is (a) increasing. (b) decreasing.

**Answer:**

a) $f(-1) = 1$

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

c) $f$ is increasing on $[-3, \infty)$
   $f$ is decreasing on $(-\infty, -3]$



**Question 3.** Determine the domain, in interval notation, of the function: $f(x) = \dfrac{\sqrt{x-2}}{x^2 - 3x}$.

**Answer:** $D_f = [2, 3) \cup (3, \infty)$

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

A) $y^3 = x^3$
B) $|y| = x + 5$
C) $y = 4 \pm \sqrt{5}$
D) $y^2 = x^2$
E) $\{(5,10),(3,6),(4,8),(5,12)\}$

**Answer:** A) $y^3 = x^3$