

King Fahd University of Petroleum and Minerals

Prep-Year Math Program

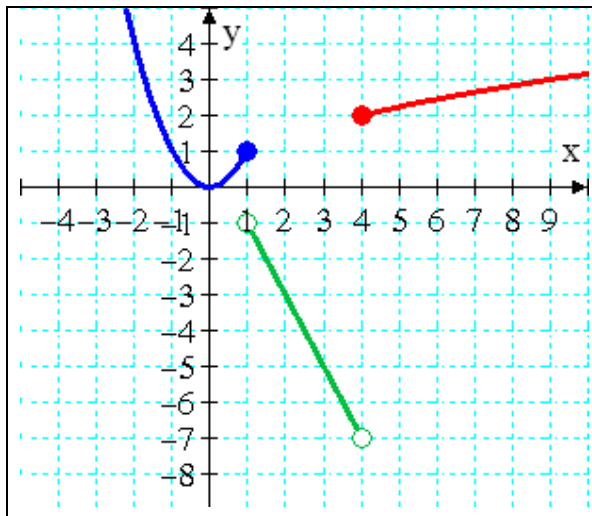
Math 001 - Term 141

Recitation 2.6

Question 1. If $f(x) = \begin{cases} x^2 & ; x \leq 1 \\ 1-2x & ; 1 < x < 4, \\ \sqrt{x} & ; x \geq 4 \end{cases}$, sketch the graph of $f(x)$, and find

- Domain of $f(x)$
- Range of $f(x)$
- Interval where the function is: i) increasing, ii) decreasing
- $f(-1)+f(2)+f(4)$

Answer:



Answer:

- $D_f = (-\infty, \infty)$
- $R_f = (-7, -1) \cup [0, \infty)$
- increasing on $[0, 1]$ and on $[4, \infty)$.
 - decreasing on $(-\infty, 0]$ and on $(1, 4)$.
- $$f(-1)+f(2)+f(4) = (-1)^2 + [1-2(2)] + \sqrt{4}$$

$$= 1 - 3 + 2$$

$$= 0$$

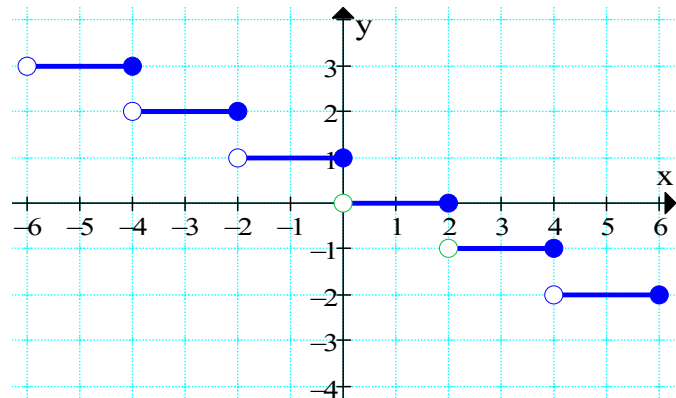
Question 2: If $f(x) = \left\lfloor 1 - \frac{x}{2} \right\rfloor$, sketch the graph of $f(x)$ and find

- x - and y - intercepts
- $f(-2.4)+f(2.006)$

Answer:

- x - int: $\{x \mid 0 < x \leq 2\}$
 y - int: $y = 1$

- $f(-2.4)+f(2.006) = 2 - 1 = 1$



Question 3: If $[a, b]$ is the largest interval on which the

function $f(x) = \begin{cases} 4 & ; x \leq -1 \\ x^2 & ; -1 < x \leq 1, \\ -x+5 & ; x > 1 \end{cases}$ is increasing, then $a+b =$

- A) 4 **B) 1** C) 2 D) 0 E) -1

Answer: **B) 1**