

بکمال

تالیف شماره ششم

باران شریفی

الف) $2\sin^2(x + \frac{\pi}{3}) - 1$ $\begin{cases} \max = 1 \rightarrow 2 \times 1 - 1 = 1 \\ \min = 0 \rightarrow 2 \times 0 - 1 = -1 \end{cases}$

سوال ۱: $R_f = [-1, 1]$

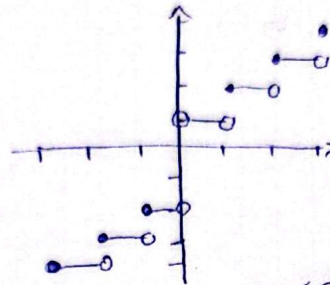
ب) $3\cos^3 x - 5$ $\begin{cases} \max = 1 \rightarrow 3 \times 1 - 5 = -2 \\ \min = -1 \rightarrow 3 \times (-1) - 5 = -8 \end{cases}$

$\rightarrow R = [-8, -2]$

۲. $y = \frac{x}{|x|} = [x] \quad x \in [-3, 3]$

$x > 0 \rightarrow 1 + [x]$

$x < 0 \rightarrow -1 + [x]$



$-3 \leq x < -2$

$\rightarrow -1 - 3 = -4$

$-2 \leq x < -1$

$\rightarrow -1 - 2 = -3$

$-1 \leq x < 0$

$\rightarrow -1 - 1 = -2$

$0 \leq x < 1$

$\rightarrow 1 + 0 = 1$

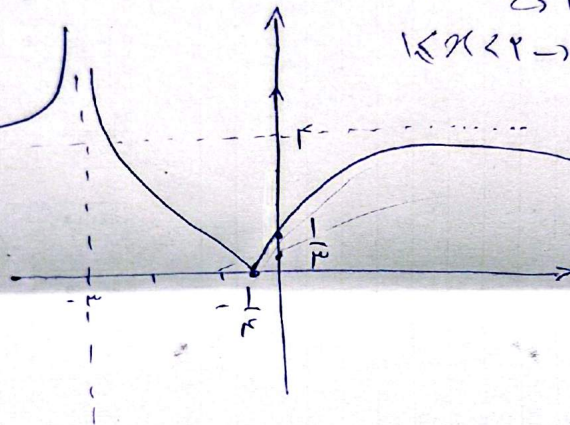
$1 \leq x < 2 \rightarrow 1 + 1 = 2$

$1 \leq x < 2 \rightarrow 1 + 1 = 2$

$x = 2$

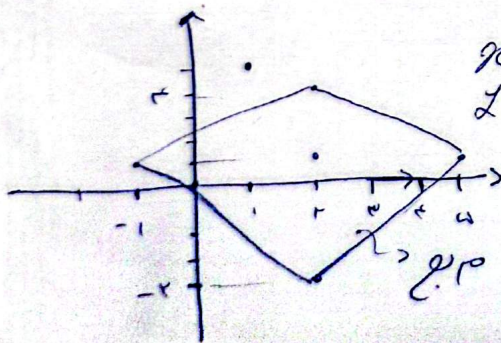
$1 + 2 = 3$

$y = \left| \frac{x+1}{x+3} \right|$



سوال ۳:

$|x-2| + |y-1| = 3$



$x < 0$
 $y < 0 \rightarrow 2 - x + 1 - y = 3$
 $-x = +y$

$x > 0$
 $y < 0 \rightarrow x - 2 + 1 - y = 3$
 $y = x - 4$

$x > 0$
 $y > 0 \rightarrow x - 2 + y - 1 = 3$
 $y = 4 - x$

$x < 0$
 $y > 0 \rightarrow 2 - x + y - 1 = 3$
 $y = x + 2$

سوال ۵:

الف) $y = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}}$ $x + \frac{1}{x} > 0 \rightarrow \frac{x^2 + 1}{x} > 0$

$\rightarrow \min = 2 \quad R = [2 + 2\sqrt{2}, +\infty)$

ب) $y = (3 - \sin x)(1 + \sin x)$

$- \sin^2 x + 2\sin x + 3$ $\begin{cases} \max = 1 \rightarrow -1 + 2 + 3 = 4 \\ \min = -1 \rightarrow -1 - 2 + 3 = 0 \end{cases}$

$R = [0, 4]$

