

یازمیر
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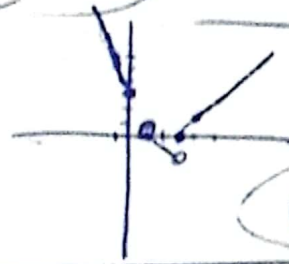
1) $y = u + |u - 2| =$

$$\frac{-u+2+u}{2-u} \quad \frac{2}{2-u+2+u} = \frac{2}{2} = 1$$

2) $|u-2| + |u-1| - |u| =$

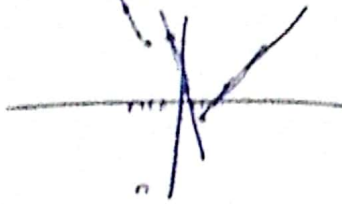
$$\frac{-u+2+1}{-u+2+1} \quad \frac{2}{1-u} \quad \frac{2}{u-2}$$

$[1, +\infty)$



$(-1, +\infty)$

$y = |u-2| - |u+2| = k$

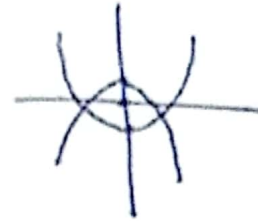


$$\frac{-2}{-u+2} \quad \frac{1}{-u+2} \quad \frac{1}{u+2}$$

1) $y = u + \frac{u}{|u|} \Rightarrow \begin{cases} u+1 & u > 0 \\ 0 & u = 0 \\ u-1 & u < 0 \end{cases}$



2) $y = u|u| - \frac{u}{|u|} = \begin{cases} u^2-1 & u > 0 \\ 0 & u = 0 \\ 1-u^2 & u < 0 \end{cases}$

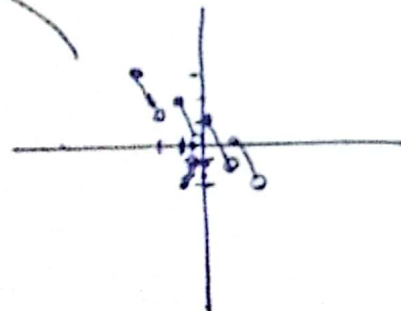


$y = \lfloor u \rfloor - u$

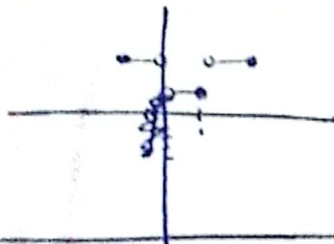
$$\begin{cases} -1 < u < -1 \\ -1 \leq u < 0 \\ 0 \leq u < 1 \\ 1 \leq u \end{cases}$$



$[-2, 2]$



$y = \lfloor u \rfloor |u|$



$y = \lfloor u \rfloor - \lfloor u \rfloor$

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با پیکر بندی و عدد دایره

الف) $y = 3 \sin u + 4 \cos u = \sqrt{3^2 + 4^2} \sin(u + \phi) = 5 \sin(u + \phi)$
 $\rightarrow y = 5 \sin(u + \phi) \Rightarrow -5 \leq y \leq 5$
 ج) $y = [2 \sin u + 3 \cos u] = \sqrt{2^2 + 3^2} \sin(u + \phi) = \sqrt{13} \sin(u + \phi) \Rightarrow [-\sqrt{13}, \sqrt{13}]$
 د) $y = \sqrt{\cos u - 3 \sin u} \geq 0 \Rightarrow [0, \sqrt{10}]$

الف) $y = \sin^2 u + 3 \sin u + 2$
 $-\frac{b}{2a} = -\frac{3}{2} \Rightarrow \sin u = 1 \rightarrow 1$
 $\sin u = -1 \rightarrow 0 \Rightarrow [-\frac{3}{2}, 5]$
 ب) $y = 2 \sin^2 u + 3 \sin u + 2$
 $-\frac{b}{2a} = -\frac{3}{4} \Rightarrow \sin u = 1 \rightarrow 1$
 $\sin u = -1 \rightarrow 1 \Rightarrow [-\frac{1}{2}, 5]$

الف) $y = \sin^2 u + 2 \cos^2 u \Rightarrow \sin u = 0 \rightarrow 0$
 $1 \rightarrow 1 \Rightarrow -\frac{b}{2a} = -\frac{2}{1} = -2 \Rightarrow [-2, 1]$
 ب) $y = \frac{\cos u}{1 + \cot^2 u} = \frac{\cos u \sin u}{\sin^2 u + \cos^2 u} = \sin u \cos u = \frac{1}{2} \sin 2u \Rightarrow [-\frac{1}{2}, \frac{1}{2}]$

الف) $y = \sin^4 u + \cos^4 u = \frac{1}{2} \leq \sin^4 u + \cos^4 u \leq 1 \Rightarrow [\frac{1}{2}, 1]$
 ب) $[\sin^4 u + \cos^4 u] \Rightarrow [\frac{1}{2} \leq \sin^4 u + \cos^4 u \leq 1] \Rightarrow [\frac{1}{2}, 1]$

الف) $y = \frac{u^2 + 1}{u + 1} \Rightarrow \frac{(u-1)(u+1)}{u+1} = u-1 \Rightarrow -1 \leq y \leq 1$
 ب) $y = \frac{u^2 - 1}{u - 1} \Rightarrow \frac{(u-1)(u+1)}{u-1} = u+1 \Rightarrow \frac{1}{2} \leq y \leq \frac{5}{2}$