حل تمرین

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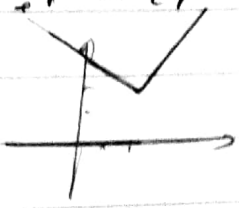

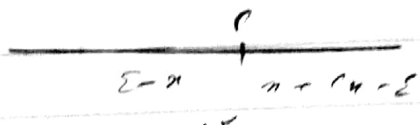

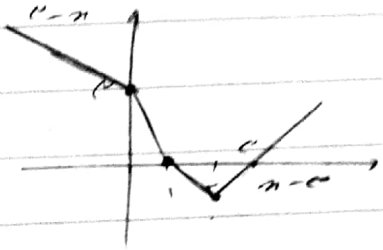

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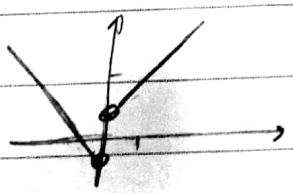

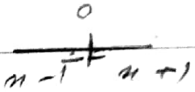

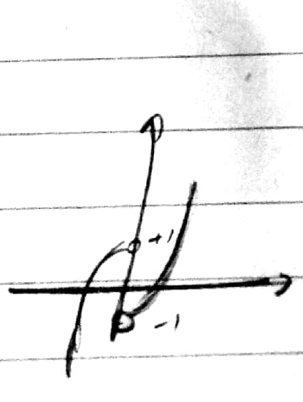

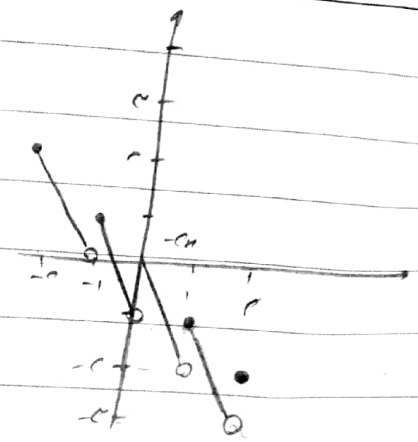

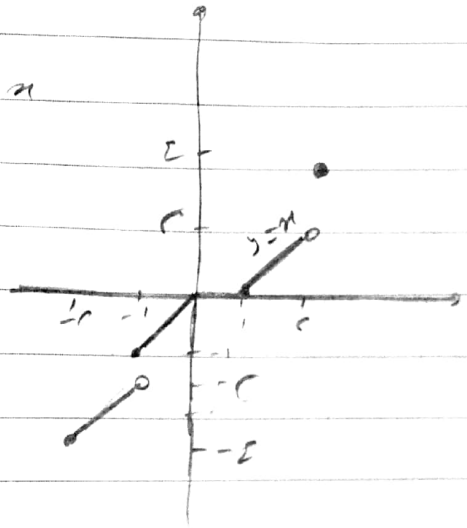

REEF GROUP

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ب) $y = 4\sin x - 3\cos x$ ۶-

$4\sin x + (-3)\cos x$

$R_y = [-5 , 5]$

ج) $y = [2\sin x + 5\cos x]$ $R_y = \{-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$-\sqrt{29} \le 2\sin x + 5\cos x \le \sqrt{29} \rightarrow [-\sqrt{29}, \sqrt{29}]$

د) $y = \sqrt{\cos x - 2\sin x} = [0, \sqrt[4]{5}]$

$[-\sqrt{5}, \sqrt{5}]$

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الف) $y = \sin^2 x + 3\sin x + 2$ $1 \rightarrow 6$ max $-1 \rightarrow 0$ min $R_f = [0 , 6]$

$\sin x$ رأس $= \frac{-3}{2} = -\frac{b}{2a}$ غ ق ق

ب) $y = 2\sin^2 x + 3\sin x + 2$ $\sin x = 1 \rightarrow = 7$ max

$\sin x = -1 \rightarrow y = 1$ min

$R_f = [\frac{7}{8}, 7]$

$\sin x = -\frac{b}{2a} = -\frac{3}{4} \rightarrow 2 \times \frac{9}{16} - \frac{9}{4} + 2 = \frac{7}{8}$

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الف) $y = \sin^4 x + 4\cos^2 x \rightarrow y = 3\cos^2 x + 1$ -1 min 4

$\underbrace{\sin^2 x + \cos^2 x}_{1} + 3\cos^2 x$ $1 \rightarrow 4$ $0 = -\frac{b}{2a} \rightarrow 1$

$R_f = [1, 4]$

ب) $y = \frac{2\cot x}{1 + \cot^2 x} = \frac{\frac{2\cos x}{\sin x}}{\frac{1}{\sin^2 x}} = \frac{2\cos x \sin x}{\frac{1}{\sin x}} = \sin 2x$

$R_f = [-1, 1]$

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حل تمرین برد

۹- الف) $y = \underbrace{\sin^4 x + \cos^4 x}_{a} = 1 - 2\sin^2 x \cos^2 x \leq 1$

$2^{-1} \leq a \leq 1 \qquad R_f = [\frac{1}{2}, 1]$

ب) $y = [\sin^8 x + \cos^8 x] = \{0\}$

$[\frac{1}{8}, 1)$

۱۰- الف) $y = \dfrac{2x^2 + 7x - 4}{x + 4} = \dfrac{(x+4)(x - \frac{1}{2})}{(x+4)} = x - \frac{1}{2}$

$x \neq -4 \qquad R_y = \mathbb{R} - \{-\frac{9}{2}\}$

ب) $y = \dfrac{x^3 - 1}{x - 1} = \dfrac{(x-1)(x^2 + x + 1)}{(x-1)} = x^2 + x + 1$

min $\left| \dfrac{-b}{2a} = -\frac{1}{2} \right.$ $\frac{3}{4}$ $\qquad R_f = (-\infty, \frac{3}{4}] - \{3\}$

$x \neq 1$

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