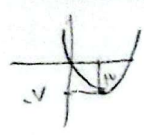


الف) $y = x^2 - 4x + 2$ $\min \left| \frac{-b}{2a} = 2 \right.$  $\sqrt{[-2, +\infty)}$ $[0, +\infty)$ -9

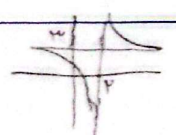
ب) $y = -x^2 + 4x + 1$ $\max \left| \frac{-b}{2a} = \frac{-4}{-2} = 2 \right.$  $\sqrt{(-\infty, 3]}$ $[0, 4]$

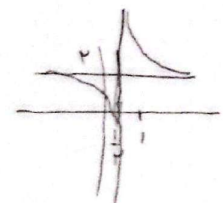
الف) R -7

ب) $\sqrt{R} = [0, +\infty)$

الف) $y = \frac{x^3 + 1}{x - 2} \Rightarrow R = \{x\}$ -8

ب) $\sqrt{R - \{2\}} = [0, +\infty) - \{2\}$

الف)  جانب قائم = 2
" أفقي = 3 -9

ب)  جانب قائم: 1/2
" أفقي: 2

الف) $y = \cos^2 x + \frac{1}{\cos^2 x} \Rightarrow [2, +\infty)$ -1.

ب) $\sqrt{\frac{x^2 + 1}{x}} = \frac{x}{x} + \frac{1}{x} = x + \frac{1}{x} \Rightarrow (-\infty, -2] \cup [2, +\infty)$

الف) $x^2 = y + 5$
 $x = \pm \sqrt{y+5}$ $R_f = [-5, +\infty)$

بالتكامل

ب) $y = x^2 + 1$
 $x^2 = y - 1$ $x = \pm \sqrt{y-1}$ R

الف) $y = x^2 - 4x + 4 \Rightarrow x^2 - 4x + 4 = y$

$y = (x-2)^2 + 2$

$(x-2)^2 = y - 2$ $(x-2) = \pm \sqrt{y-2}$
 $x = \pm \sqrt{y-2} + 2$

$[2, +\infty)$

-2

ب)

الف) $y = \frac{x^2 + 1}{x^2 - 2} \Rightarrow x^2 + 1 = y(x^2 - 2)$

$x^2 - yx^2 = -2y - 1$

$x^2(1-y) = -2y - 1 \Rightarrow x^2 = \frac{-2y-1}{1-y} = \pm \sqrt{\frac{-2y-1}{1-y}}$

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

$[-\frac{1}{2}, 1)$

-3

ب) $y = \frac{2|x|+1}{|x|-2} \Rightarrow 2|x|+1 = y(|x|-2)$

$2|x| - y|x| = -2y - 1 \Rightarrow \frac{|x|(-y+2)}{1-y} = -\frac{2y+1}{1-y}$

$-\frac{1}{2} + \frac{2}{1} = \frac{3}{2}$
 $[-\frac{1}{2}, 2)$

$y = \frac{1}{x^2 - 4x}$

$y(x^2 - 4x) = 1$

$y(x^2 - 4x) - 1 = 0$

$x = \frac{-b \pm \sqrt{\Delta}}{2a}$

$y^2 + 4y \geq 0$

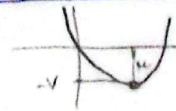
$4y(y+1) \geq 0$

$(-4y)^2 - 4(y)x - 1 = \frac{-1}{4} + \frac{1}{1} + \frac{1}{4} = 1$
 $(-\infty, -\frac{1}{2}] \cup (0, +\infty)$

-4

الف) $y = x^2 - 4x + 4$

$\min \left| \frac{b}{2a} = \frac{4}{2} = 2 \right|$

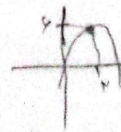


$[-2, +\infty)$

-5

ب) $y = -x^2 + 4x + 4$

$\max \left| \frac{b}{2a} = \frac{4}{2} = 2 \right|$



$(-\infty, 4]$