

مثال ٢٠ افترض: $\sin^2 x = 0$ $y = -1$ (1)
 $\sin^2 x = 1$ $y = 1$ $R = [-1, 1]$ (2)
 $\sin^2 x = \frac{1}{4}$ $y = \pm \frac{1}{2}$

5 $\rightarrow) g(x) = 3 \cos^2 x - 2$ $\cos^2 x = 1$ $y = 1 - 2 = -1$
 $\cos^2 x = 0$ $y = 0 - 2 = -2$ $R_f = [-2, -1]$
 $\cos^2 x = \frac{1}{4}$ $y = \frac{1}{4} - 2 = -\frac{7}{4}$

7 $\neq 0$ $y = \frac{\lambda}{|\lambda|} + [a]$

$\lambda < -1 \rightarrow y = -1$ $\lambda = -2$

10 $-2 < \lambda < -1 \rightarrow y = -1 - \lambda = -2$

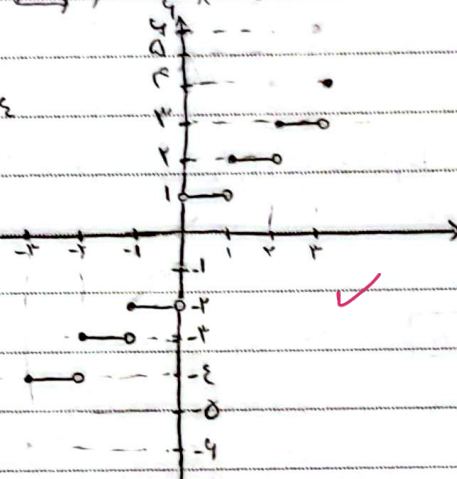
$-1 < \lambda < 0 \rightarrow y = -1 - \lambda = -2$

$0 < \lambda < 1 \rightarrow y = 1$

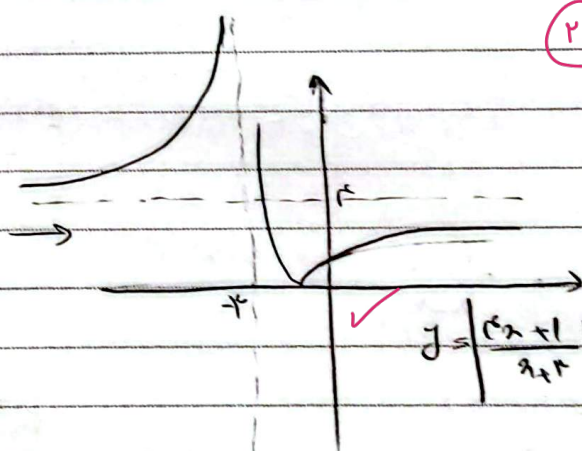
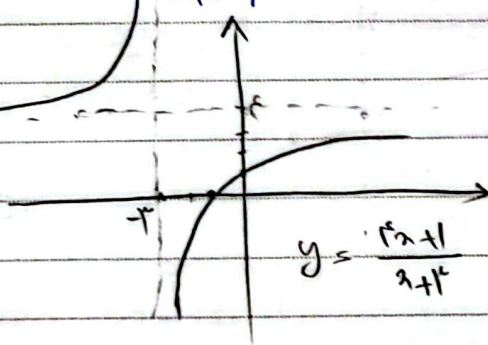
$1 < \lambda < 2 \rightarrow y = 1 + \lambda = 2$

$2 < \lambda < 3 \rightarrow y = 1 + \lambda = 3$

15 $\lambda = 3 \rightarrow y = 3$



20 $y = \left| \frac{\lambda + 1}{\lambda + 2} \right|$



25 $|x-2| + |y-1| = 2 \rightarrow -x+2+y-1=2$

$y = x+1$ ✓

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

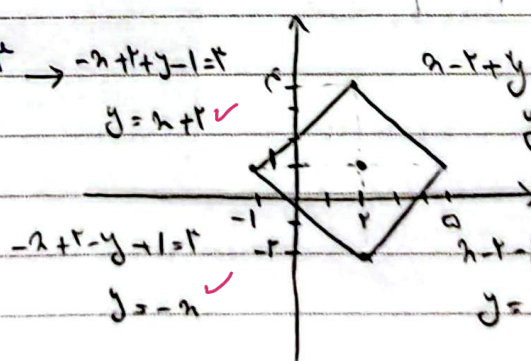
$y = -x$ ✓

$x-2+y-1=2$

$y = -x+5$ ✓

$x-2-y+1=2$

$y = x-3$ ✓



$$a) f(x) = x + \frac{1}{x} + \sqrt{x + \frac{1}{x}}$$

$$= \left(\sqrt{x + \frac{1}{x}} + 1 \right)^2 - 1$$

$$x + \frac{1}{x} \geq 1 \Rightarrow y = x + \sqrt{x} \Rightarrow R_f = [1 + \sqrt{2}, +\infty) = [1(1+\sqrt{2}), +\infty)$$

$$b) y = (x - \sin x)(1 + \sin x)$$

$$= -\sin^2 x + x \sin x + x$$

$$\sin x = -1 \Rightarrow y = -1 - x + x = 0$$

$$\sin x = 1 \Rightarrow y = -1 + x + x = 2x - 1$$

$$\sin x = \frac{1-x}{x} \Rightarrow y = -1 + x + \frac{1-x}{x} = \frac{1}{x}$$

$$R_f = [0, 2]$$

$$f(x) = \frac{1}{x} + 1$$

$$D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$\lim_{x \rightarrow 9} f(x) = \frac{1}{9} + 1 = \frac{10}{9} \Rightarrow \frac{1}{x} = \frac{10}{9} \Rightarrow x = \frac{9}{10} \Rightarrow \frac{9}{10} + 1 = \frac{19}{10} \Rightarrow \frac{19}{10} = 1.9$$

$$f(x) = \sqrt{ax^2 + bx + c}$$

$$[1, +\infty)$$

$$f(x) = \sqrt{bx + c} = 1 \Rightarrow bx + c = 1$$

$$f(x) = 1$$

$$L: a = 0$$

$$R_f = [1, +\infty)$$

$$f(x) = \sqrt{bx + c} = 1 \Rightarrow bx + c = 1$$

$$b = 1 \Rightarrow c = 0$$

$$g(x) = \sqrt{x^2 + 2} \quad \min \left| \frac{b}{2a} = 0 \right|$$

$$0 + 2 = 2$$

$$R_g = [1, +\infty)$$

$$f(x) = \frac{x^2 - 4}{x + 1} = \frac{x(x - 2)(x + 2)}{x + 1}$$

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

$$\lim_{x \rightarrow -1} \frac{-b}{a} = \frac{r}{p} = 1$$

$$R_f = [1, +\infty)$$

$$D_f = \mathbb{R} - \{a, b\} \rightarrow a, b = -1, 2$$

$$R_f = [-1, +\infty)$$

$$\Rightarrow c = 1$$

$$\frac{x^2 - 4}{x + 1} = 1 \Rightarrow x^2 - 4 = x + 1 \Rightarrow x^2 - x - 5 = 0$$

$$x^2 - 12x + 14 = 0 \Rightarrow x(x - 12) = -14 \Rightarrow x = 2$$

$$f\left(\frac{a+b}{2}\right) = f\left(\frac{-1+2}{2}\right) = f\left(\frac{1}{2}\right) = 1 - \left(\frac{1}{2}\right) = \frac{1}{2}$$

Subject:

Year:

Month:

Day:

$$y = \sqrt{2x^2 + 4x + 1}$$

$$Df = [-4, 12]$$

$$Rf = ?$$

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

$$x-2 \in [-4, 12]$$

$$\begin{matrix} x=-4 & y=-1 \\ x=12 & y=10 \end{matrix}$$

$$Rf = [-1, 10]$$

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

$$\Rightarrow a = -4, b = 12$$

$$y = [x] + [x + \frac{1}{x}] \quad [\frac{1}{x}, x]$$

$$\frac{1}{x} < x < 1 \rightarrow y = 0 + 1 = 1$$

$$1 < x < \frac{x}{x} \rightarrow y = 1 + 1 = 2$$

$$\frac{x}{x} < x < x \rightarrow y = 1 + x = x$$

