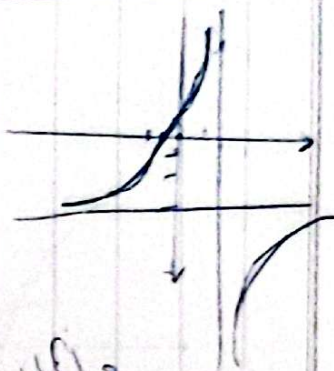




(4)

decreasing $\Rightarrow x \rightarrow \infty \Rightarrow y \rightarrow -\frac{1}{x}$
 increasing $\Rightarrow x \rightarrow -\infty \Rightarrow y \rightarrow -\frac{1}{x}$

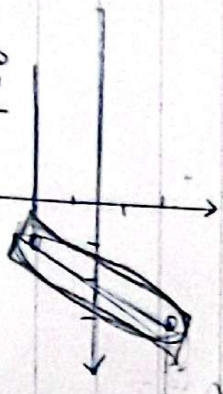
$$y = \frac{r^2 x + 1}{x - r} \Rightarrow$$

$$x = \frac{r^2 y + 1}{y - r} \rightarrow xy - rx = r^2 y + 1$$

$$xy - rx = -rx - 1 \Rightarrow y(r - x) = -rx - 1$$

$$y = \frac{-rx - 1}{r - x}$$

(5)



$$y = rx - \varepsilon$$

$$x = ry - \varepsilon \xrightarrow{\text{sub}} y = \frac{x + \varepsilon}{r}$$

(6)



$$x^2 + \varepsilon = y \Rightarrow y + \varepsilon = x$$

$$y = \sqrt{x - \varepsilon}$$

$$y = \frac{x + 1}{r}$$

$$x = \varepsilon x - 1 \Rightarrow x = \varepsilon y - 1$$

$$a = -y$$

$$f(b) \Rightarrow b^{-1} = \frac{r^2 y + 1}{-r - r} \Rightarrow \frac{r^2 y + 1}{-2r}$$

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

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

$$-xy - rx = r^2 y + 1$$

$$-rx - 1 \Rightarrow y(r + \varepsilon) \xrightarrow{\text{sub}} y = \frac{-1 - rx}{x + r} \Rightarrow y = \frac{-rx}{x + r}$$

$$y = \frac{x}{x^2 + 1} \Rightarrow x = \frac{y}{y^2 + 1}$$

(10)

$$y^2 x^2 + x = y \Rightarrow y^2 x^2 - y + x = 0$$

$$y^2 x^2 - y + x = 0$$

$$\Delta = 1 - 4x^2 y^2$$

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

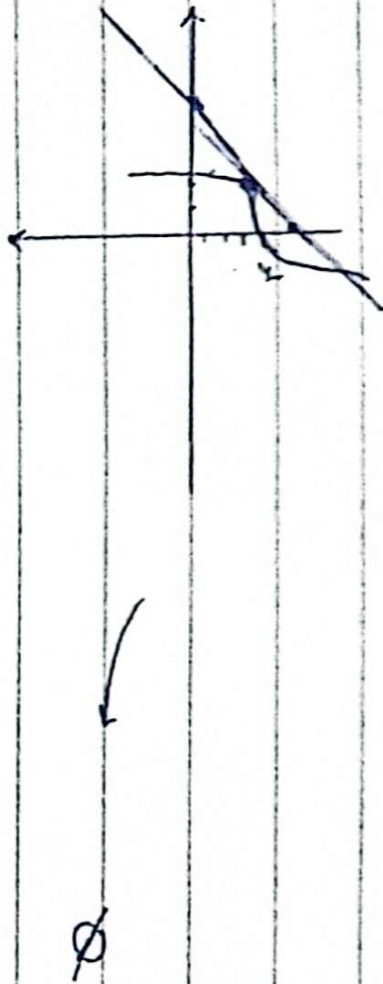
$$1 - 4x^2 y^2 \geq 0$$

$$4x^2 y^2 \leq 1$$

$$-\frac{1}{2} \leq x \leq \frac{1}{2}$$

7/1/2020

$$\text{تمت } \left. \begin{array}{l} x^2 - x \rightarrow x = 1 \quad y = 2 \\ x^2 - x \rightarrow x = 2 \quad y = 1 \end{array} \right\}$$



(٢) $f(x) = x^2 - x - 1.0$

ب) $f(x_2 - 1.0) = f(0.5 - 1.0) = f(-0.5) = \frac{1}{4} - \frac{1}{2} - 1.0 = -1.25$

$\boxed{k = -1.0}$

(٣) $\frac{a^r}{a-1} = ra \quad ra^r - ra = a^r \quad a^r - ra = 0 \quad a(a-r) = 0 \quad a = 0, r$

(٤) $f \circ f^{-1} = \{(0,0), (1,1), (2,2)\}$

$f^{-1} \circ f = \{(1,1), (2,2), (0,0)\}$

ب) $f \circ g^{-1} = \{(1,2), (2,1)\}$

ج) $g^{-1} \circ f = \{(1,2), (2,1)\}$

(٥) $\left\{ \left(\frac{1}{2}, 1 \right), \left(\frac{1}{2}, 1 \right) \right\} \Rightarrow \frac{\{(1,2), (2,1)\}}{\{(1,2), (2,1)\}}$