

$$y) \quad x - \infty \quad +) \quad x - 1$$

$$\frac{x^2+1}{x^2+1} \quad 12$$

$$x - \infty > 0 \quad x > 0$$

$$(x, +\infty) \Rightarrow [x, +\infty)$$

$$x^2+1 \neq 0$$

$$\frac{\sqrt{x-1}}{x-1}$$

$$x-1 > 0 \quad x > 1 \quad (1, +\infty) \Rightarrow (1, +\infty)$$

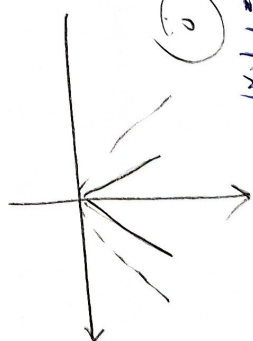
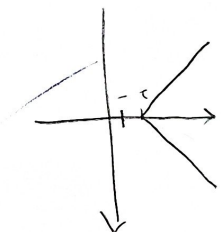
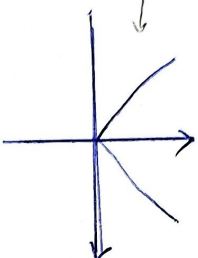
$$\frac{r^2+r}{|x|+x^2}$$

$$|x|+x^2 > 0 \quad 12-803$$

$$|x|+x^2 > 0 \quad \text{always positive}$$

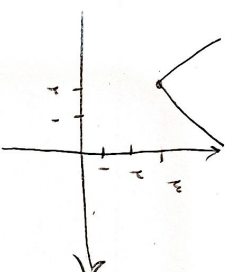
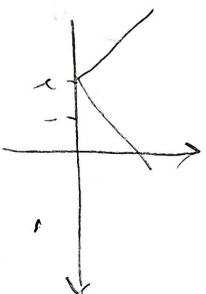
$$y = |x|+1$$

$$y = r/|x|$$



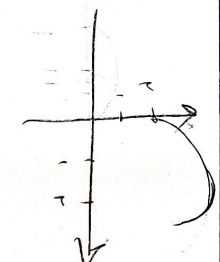
$$y = (x+1)$$

$$y = |x+1|+1$$

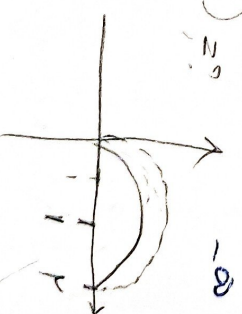


$$f(x) \neq 1$$

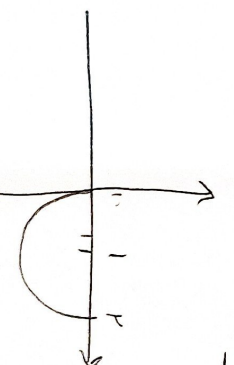
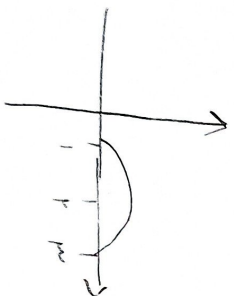
$$r f(x) \geq 0$$



$$-f(x)$$



$$f(x-1)$$



$$(x-1)(x-1)(x-1)$$

$$- \phi + \phi - \phi +$$

$$5$$

$$(x-1)(x-1)(x-1)$$

$$+ \phi - \phi - \phi +$$

$$\frac{(x-r)(x-k)}{(x-r)} \quad \text{---}$$

$$\frac{(x-r)(x-k)}{(x-r)(x-k)} = 1$$

Sign chart for $(x-r)(x-k)$:

$x < r$	$r < x < k$	$x > k$
+	-	+

~~$(x-r)(x-k)$~~

$$\frac{(x-r)(x-k)}{(x-r)(x-k)} = 1$$

$$\frac{(x-r)(x-k)}{(x-r)(x-k)} = 1$$

Sign chart for $(x-r)(x-k)$:

$x < r$	$r < x < k$	$x > k$
+	-	+

$$\frac{x^k - x^r}{x^k + x^r} \rightarrow R$$

$$x^k - x^r \neq 0$$

$$x^r(x^k - 1) \neq 0$$

$$\frac{-1}{x^k + x^r} = 0$$

Sign chart for $x^k + x^r$:

$x < 0$	$0 < x < 1$	$x > 1$
+	-	+

$$y = \frac{x^k - 1}{x^k - x}$$

$$\frac{x^k - 1}{x^k - x} \geq 0$$

Sign chart for $\frac{x^k - 1}{x^k - x}$:

$x < 0$	$0 < x < 1$	$x > 1$
+	-	+

$$\frac{-1}{x^k + x^r} = 0$$

Sign chart for $x^k + x^r$:

$x < 0$	$0 < x < 1$	$x > 1$
+	-	+

$$\frac{x^k - 1}{x^k - x}$$

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

$$\frac{(x-1)(x+1)}{(x-1)(x-1)} \geq 0$$

$$\frac{-1}{x^k + x^r} = 0$$

Sign chart for $x^k + x^r$:

$x < 0$	$0 < x < 1$	$x > 1$
+	-	+

$$21) \quad y' - x = kx^r$$

مطلوب

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$$\text{حل عام} \Rightarrow \begin{cases} y' = kx^r + x \\ y_r = kx^r + x \end{cases} \rightarrow y' = y_r \rightarrow y = y_r$$

$$\rightarrow |y| + x^r = x + kx^r$$

حل عام

$$\Rightarrow \begin{cases} |y| = -x + kx^r \\ |y| = -x + kx^r \end{cases} \quad y = \pm y_r$$

$$2) \quad \sqrt{x-k} + |y-r| = 0$$

حل عام (مطلوب)

$$x = k$$

$$y = r$$

مطلوب حل عام

$$\rightarrow x = \cos y$$

$$\text{حل عام} \Rightarrow x \Rightarrow 0 \Rightarrow \cos y \rightarrow 0 \rightarrow y = \frac{\pi}{2}$$

مطلوب

$$y = \frac{x+k}{x-k} = \frac{x' - kx + k}{x' - kx} \quad R = \{0, k\} \Rightarrow D_f$$

$$\begin{cases} x = 0 \\ x = k \end{cases}$$

$$y = \frac{x+k}{x' - kx + k} \quad R' = D_f$$

$$y = \frac{x+k}{x' + x + k} \quad R' = D_f$$

$$y = \frac{x+k}{x' - kx + k}$$

$$\begin{cases} x \geq 0 \\ x < k \end{cases} \quad \begin{cases} x' (x' - k) \neq 0 \\ x' (x' + k) \neq 0 \end{cases} \quad D_f = R - [0, k]$$