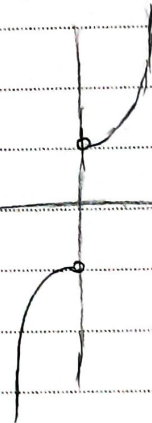


$y = \ln\left(x^2 + \frac{1}{x}\right)$ $x=0$ $\rightarrow$ $y = x^2 + 1$
 $x > 0$ $\rightarrow$ $y = x^2 + 1$
 $x < 0$ $\rightarrow$ $y = -x^2 - 1$



۳- تابع نیچر

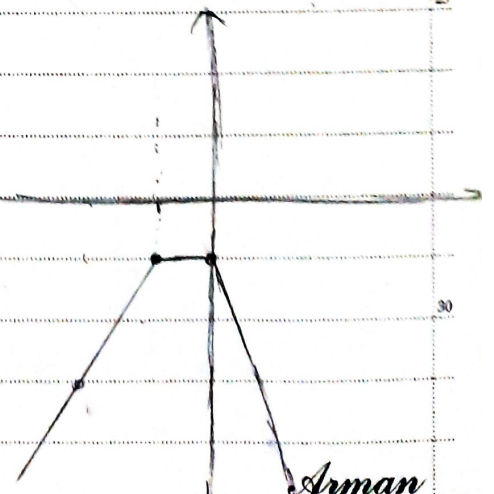
$x > 0 \rightarrow f(x) = \frac{x^2 + 1}{x - (x+1)} = \frac{x^2 + 1}{-1} = -x^2 - 1$

$x = 0 \rightarrow f(x) = \frac{1}{-1} = -1$

$-1 < x < 0 \rightarrow f(x) = \frac{x^2 + 1}{-x - (x+1)} = \frac{x^2 + 1}{-2x - 1} = -1$

$x = -1 \rightarrow f(x) = \frac{-1}{1} = -1$

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



(-2003) $\rightarrow a = 0$

Arman

$$y = \log \frac{n^p - m - n}{-p}$$

$$n^p - m - n > 0 \Rightarrow (n-p)(n+p) > 0$$

$$\frac{-p}{+p} = \frac{p}{p}$$

$$n \in (-\infty, -p) \cup (p, +\infty)$$

5

$$\text{الف) } a^p - p > 1 \Rightarrow a^p > p \Rightarrow \underline{a > p}$$

$$\underline{a > p}$$

$$\text{ب) } a^p - p > 1 \Rightarrow a^p > p \Rightarrow \underline{a > p}$$

$$\underline{a > p}$$

10

15

20

$$f(p(n)) \leq f(\sqrt{n}) \Rightarrow p(n) \leq \sqrt{n}$$

$$n + \sqrt{n} - p \leq \sqrt{n} \Rightarrow n - p \leq 0 \Rightarrow n \leq p$$

$$p(n) = n > 0 \quad I$$

$$f(n) = n > 0 \quad I$$

$$\Rightarrow I \cap I = [0, \infty)$$

$$\underline{[0, \infty)}$$

25

30