

1

(I) $f_{(-n)} = -n f(n) = r|n| + 1$

(II) $n \rightarrow -n$
 $f(n) + n f(-n) = r|-n| + 1 = r|n| + 1$

II, $\rightarrow f_{(-n)} - n f_{(-n)} = n f(n) - f(n) = 0$

$$f_{(-n)} (1-n) = (n+1) f(n)$$

$$f_{(-n)} = \frac{n+1}{1-n} f(n)$$

$$\left(\frac{n+1}{1-n} - n \right) f(n) = r|n| + 1$$

$$f(n) = \frac{r|n| + 1}{n+1 - n + n^2} = \frac{(r|n| + 1) / (1-n)}{1 + n^2}$$

2

~~Ex 1.1~~ $f_{(2)} + f_{(1)} = 2^5 - 3 \cdot 2 + 4$

$n=1$ $r f_{(1)} = 4 \rightarrow f_{(1)} = 4$

$$f_{(2)} = 2^5 - 3 \cdot 2 + 4 - f_{(1)} = 2^5 - 3 \cdot 2 + 4$$

$$f_{(2^5)} = 2^5 - 3 \cdot 2^5 + 4$$

3

~~Ex 1.2~~

$$y = \frac{2^5 + 2 + r}{n-1}$$

$$\mathbb{R}_f = (-\infty, -1] \cup [0, +\infty)$$

$$+ \quad - \quad - \quad +$$

$$y^2 - y = 2^5 + 2 + r$$

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

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

$$2^5 + 2(1-y) + r + y = 0$$

$$\Delta \geq 0$$

$$n = \frac{(y-1) \pm \sqrt{y^2 + 1 - 4y - 2 - 4y}}{2}$$

$$y = r^c + \frac{1}{r^c + c} + c - r$$

$$\left(r^c + c + \frac{1}{r^c + c} \right) r$$

$$R_f = \left[r, c\infty, +\infty \right) - r = \boxed{[., r\infty, +\infty)}$$

$$y = \frac{r^c + r}{r^c - 1} \quad r^c: [., +\infty)$$

$$R_f = (-\infty, -r] \cup (r, +\infty)$$

$$y r^c - y = r^c + r$$

$$r^c (y - r) = y + r$$

$$r^c = \frac{y + r}{y - r} \gg .$$

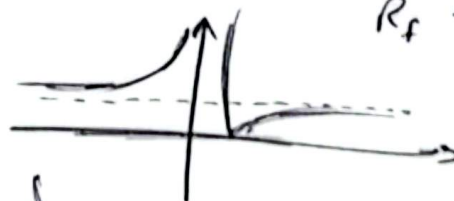
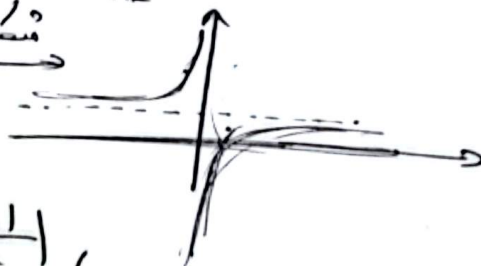
$$f(r) = \frac{r \delta_{r^c} + r^c}{\delta_{r^c} - r} \quad \delta_{r^c}: [-1, +1]$$

$$\frac{r}{-r} = -\frac{1}{r}$$

$$R_f = [-r, -\frac{1}{r}]$$

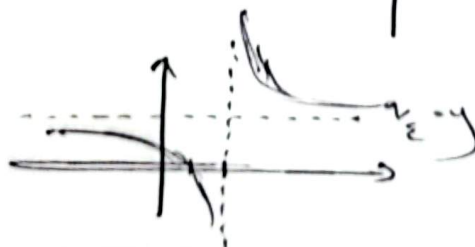
$$y = \left| \frac{r^c - 1}{r^c} \right|$$

$$y = \left| \frac{r^c - 1}{r^c} \right|$$



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

$$y = \sqrt{\frac{r^c - 1}{r^c - 1}}$$

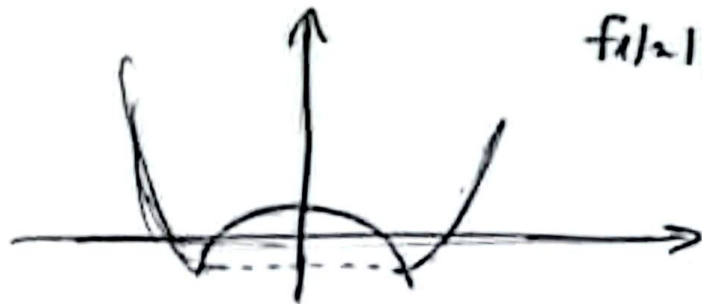


$$R_f = [., +\infty) - \{ \frac{1}{r} \}$$

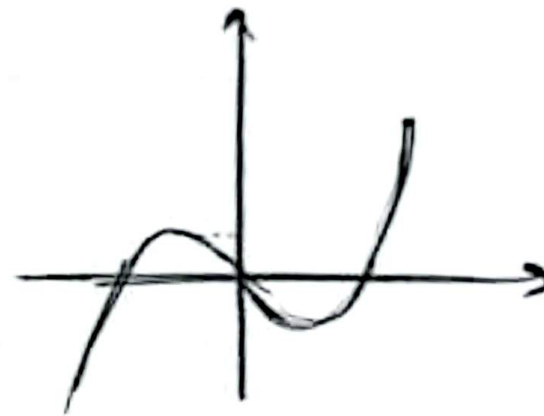
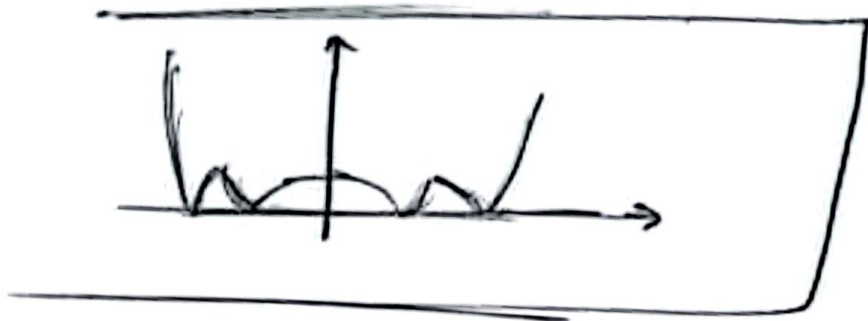
$$z|z| - r_n$$

$$z < -r_n - r_n$$

$$z > r_n - r_n$$



$$f(|z| + 1)$$



چون تابع متناهی به صورتی نمایش داده شده است

$$f(z) = f(|z|)$$

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