

۱- در جواب

۲۰ آفدین:  $y = \frac{n^2+1}{n^2-1}$

الف)  $y = \frac{|n|+1}{|n|-1}$

$y|n|-1 = |n|+1$

$|n|(y-1) = y+1 \rightarrow |n| = \frac{y+1}{y-1}$

$\frac{-1}{+0} \quad \frac{1}{+0} \quad \infty$

$R_f = (-\infty, -\frac{1}{2}) \cup (1, \infty)$

$y|n| = n^2+1 \rightarrow n^2 - y|n| + 1 = 0$

$\Delta = |n|^2 - 4 = 0$

$|n| = \frac{y \pm \sqrt{y^2-4}}{2}$

$R_f = [2, \infty)$

$ym + y^2 = n^2 + 2n - 1 \rightarrow n^2 + (2-y)n - 2 - y^2 = 0$

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

$y^2 + 4y + 12 > 0 \rightarrow R_f = (-\infty, -9) \cup (-2, \infty)$

$R_f \rightarrow n^2 - n + 1 \neq 0 \rightarrow \Delta < 0$

$R_f = [1, \infty)$

$R_f = \frac{n^2 - n + 1}{n^2 - n + 1}$

الف)  $y = \sqrt{-n^2 + 2n - 1}$

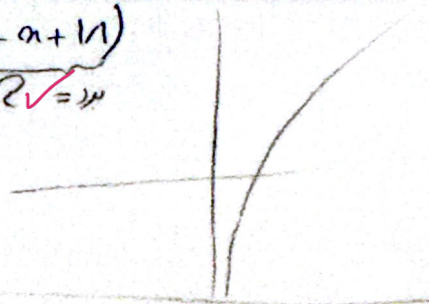
$R_f = (-\infty, 2]$

$y = \sqrt{7n^2 - 14n}$

$R_f = [-2, \infty)$

الف)  $y = \log(n^2 - n + 1)$

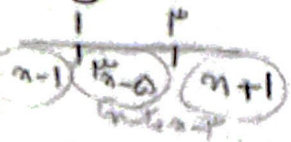
$R_f = [1, \infty)$



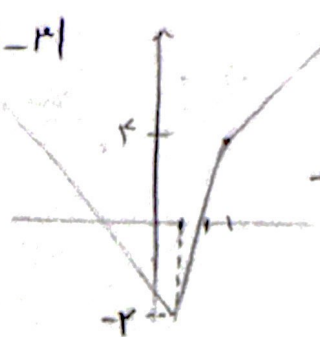
$y = \log_r \frac{n^2+1}{n} \rightarrow n + \frac{1}{n} > r$

$R_f = [1, \infty)$

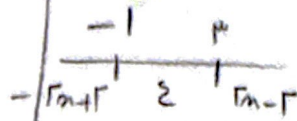
الف)  $y = |m-1| - |m-2|$



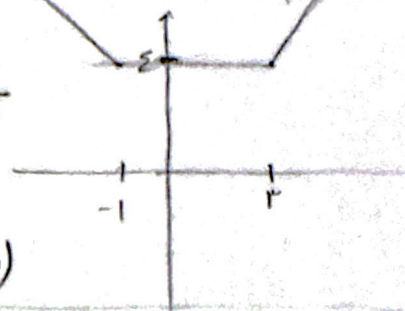
$\mathcal{D}_f = [-2, \infty)$



ب)  $y = |m-1| + |m+1|$

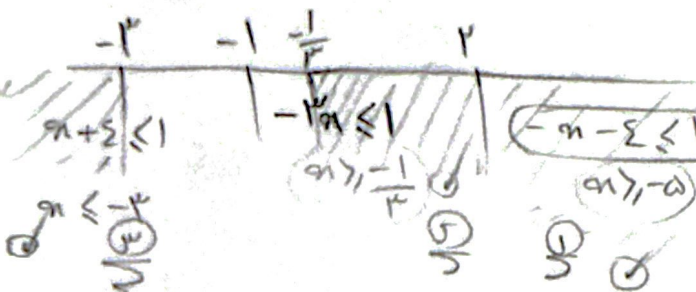


$\mathcal{D}_f = [2, \infty)$



برای تابع درجه اول

(2)



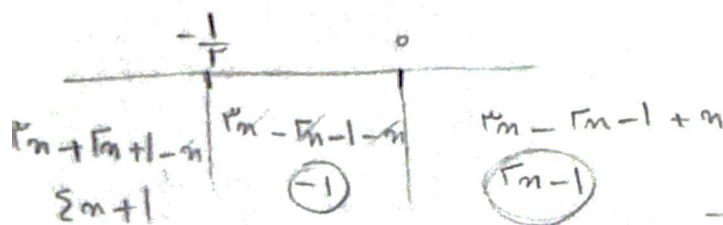
؟  $|m-1| - |m+1| \leq 1$

برای تابع درجه اول

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$-m+2-m-1 \leq 1$   
 $-2m+1 \leq 1$   
 $-2m \leq 0$   
 $m \geq 0$

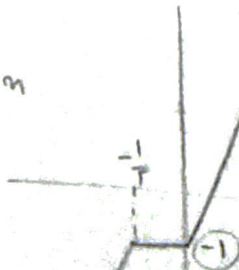
$\mathcal{D}_f = (-\infty, 0] \cup [1, \infty)$



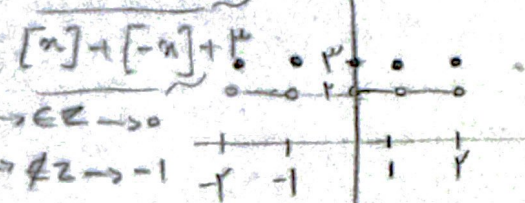
؟  $y = |m-1| + |m+1|$

(2)

$\mathcal{D}_f = [1, \infty)$



الف)  $y = [m] + [3-m]$



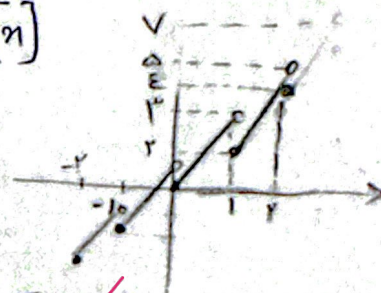
$\mathcal{D}_f = [1, 3]$

4- نمودار تابع در بازه  $[-2, 2]$

(2)

$y = [m] - [m]$

$0 \leq [m] - [m] \leq 1$   
 $1 \leq [m] - [m] \leq 2$   
 $-1 \leq [m] - [m] \leq 0$



$\mathcal{D}_f = [-2, 2]$

الف)  $y = \sin m - \sin(m+1)$

$\sin m = 1 \rightarrow 1 - 1 + 1 = 1$   
 $\mathcal{D}_f = [1, 3]$

$\sin m = -1 \rightarrow -1 - 1 + 1 = -1$

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

ب)  $\sin^2 m + \sin^2(m+1)$

برای تابع درجه اول

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$\sin^2 m = 1$   
 $\sin^2(m+1) = 1$

$\rightarrow \frac{1}{2}$

$\rightarrow \frac{1}{2}$

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