

تعریف ریاضی (الف):
$$\left. \begin{aligned} y_1^r &= 2x^2 + x \\ y_2^r &= 2x^2 + x \end{aligned} \right\} \Rightarrow y_1^r = y_2^r \Rightarrow y_1 = y_2 \Rightarrow \text{تابع است}$$

تابع نیست $\Rightarrow y = \pm 3 \Rightarrow |y| = 3 \Rightarrow x = 0$ ، مثال نقض (ب)

تابع است $\Rightarrow$ باید $\begin{cases} \sqrt{x-4} = 0 \Rightarrow x = 4 \\ |y-2| = 0 \Rightarrow y = 2 \end{cases}$ جمع، عبارت نامعنی مفروضه (ج)

د) مثال نقض : $x=0 \Rightarrow \cos y=0 \Rightarrow y=k\pi + \frac{\pi}{2}$ تابع نیست $\frac{d}{dx} \cos^{-1} 0, \frac{\pi}{2}$

c) $x^T P x = 0 \Rightarrow x = 0, x = r \Rightarrow D_f = \mathbb{R} - \{0, r\}$

$$b) \quad x^2 - 14x + 14 = 0 \Rightarrow \Delta = b^2 - 4ac = 196 - (4 \times 14) = 100 \Rightarrow D_f = 10$$

c) $u^T + u + 1 = 0 \Rightarrow \Delta = b^T - 4ac = 1 - 4 \times 1 = -3 < 0 \Rightarrow D_f = \emptyset$

$$\Rightarrow x^T - rx^T = 0 \Rightarrow (x^T - rx^T)(x^T + rx^T) = 0 \Rightarrow x(x-r)x(x+r) = 0$$

$$\Rightarrow x=0, x=r, x=-r \Rightarrow D_f = \mathbb{R} - \{0, r, -r\}$$

الف) $\left. \begin{array}{l} 4 - n \geq 0 \Rightarrow n \leq 4 \\ n - 2 \geq 0 \Rightarrow n \geq 2 \end{array} \right\} \Rightarrow D_f = [2, 4]$

ب) $\alpha^2 + 1 = 0 \Rightarrow \alpha^2 = -1 \times$ جواب ندارد $\Rightarrow D_f = \mathbb{R}$

$$2.) \left. \begin{array}{l} x-r \neq 0 \Rightarrow x \neq r \\ x-r > 0 \Rightarrow x > r \end{array} \right\} \Rightarrow D_f = [r, +\infty) - \{r\}$$

2) $|x| + x^2 = 0 \Rightarrow x = 0 \Rightarrow D_f = \mathbb{R} - \{0\}$

الف) 
 $y = |x| + 2$

c) 

c)  The graph shows a V-shaped function opening upwards. The vertex is located at the point (-2, 0) on the x-axis. The x-axis is labeled with -2 at the vertex. The equation y = |x + 2| is written below the graph.

2)  $y = |x| + r$

الف) 

→)



$f(x)$

2.)

A graph of a function $f(x-1)$ is shown on a Cartesian coordinate system. The function is a downward-opening parabola with its vertex at $(1, 1)$. The parabola intersects the x-axis at $(0, 0)$ and $(2, 0)$. Dashed lines indicate the vertex coordinates. The x-axis is labeled with 1 and 2.

$$y) - f(x)$$

A hand-drawn graph of a parabola on a Cartesian coordinate system. The parabola opens upwards, with its vertex at the point (1, -1). It intersects the x-axis at two points, (0, 0) and (2, 0), which are marked with dots. The y-axis is labeled with -1 at the vertex's height. The x-axis has tick marks at 0, 1, and 2.

الف) $n=2$ $n=3$ $n=4$

n	2	3	4
y	-	+	-

ب) $n=2$ $n=3^*$ $n=4$

n	2	3*	4
y	+	-	+

6

الف)

n	2	3	4
y	-	+	-

ب)

n	2	3*	4
y	+	-	+

7

الف) $y = \frac{(n-1)(n^2+n-2)}{n-3} \Rightarrow$ $n=1$ $n=2$ $n=3$ $n=4$ $n=5$ $n=6$ $n=7$ $n=8$ $n=9$ $n=10$ $n=11$ $n=12$ $n=13$ $n=14$ $n=15$ $n=16$ $n=17$ $n=18$ $n=19$ $n=20$ $n=21$ $n=22$ $n=23$ $n=24$ $n=25$ $n=26$ $n=27$ $n=28$ $n=29$ $n=30$ $n=31$ $n=32$ $n=33$ $n=34$ $n=35$ $n=36$ $n=37$ $n=38$ $n=39$ $n=40$ $n=41$ $n=42$ $n=43$ $n=44$ $n=45$ $n=46$ $n=47$ $n=48$ $n=49$ $n=50$ $n=51$ $n=52$ $n=53$ $n=54$ $n=55$ $n=56$ $n=57$ $n=58$ $n=59$ $n=60$ $n=61$ $n=62$ $n=63$ $n=64$ $n=65$ $n=66$ $n=67$ $n=68$ $n=69$ $n=70$ $n=71$ $n=72$ $n=73$ $n=74$ $n=75$ $n=76$ $n=77$ $n=78$ $n=79$ $n=80$ $n=81$ $n=82$ $n=83$ $n=84$ $n=85$ $n=86$ $n=87$ $n=88$ $n=89$ $n=90$ $n=91$ $n=92$ $n=93$ $n=94$ $n=95$ $n=96$ $n=97$ $n=98$ $n=99$ $n=100$ $n=101$ $n=102$ $n=103$ $n=104$ $n=105$ $n=106$ $n=107$ $n=108$ $n=109$ $n=110$ $n=111$ $n=112$ $n=113$ $n=114$ $n=115$ $n=116$ $n=117$ $n=118$ $n=119$ $n=120$ $n=121$ $n=122$ $n=123$ $n=124$ $n=125$ $n=126$ $n=127$ $n=128$ $n=129$ $n=130$ $n=131$ $n=132$ $n=133$ $n=134$ $n=135$ $n=136$ $n=137$ $n=138$ $n=139$ $n=140$ $n=141$ $n=142$ $n=143$ $n=144$ $n=145$ $n=146$ $n=147$ $n=148$ $n=149$ $n=150$ $n=151$ $n=152$ $n=153$ $n=154$ $n=155$ $n=156$ $n=157$ $n=158$ $n=159$ $n=160$ $n=161$ $n=162$ $n=163$ $n=164$ $n=165$ $n=166$ $n=167$ $n=168$ $n=169$ $n=170$ $n=171$ $n=172$ $n=173$ $n=174$ $n=175$ $n=176$ $n=177$ $n=178$ $n=179$ $n=180$ $n=181$ $n=182$ $n=183$ $n=184$ $n=185$ $n=186$ $n=187$ $n=188$ $n=189$ $n=190$ $n=191$ $n=192$ $n=193$ $n=194$ $n=195$ $n=196$ $n=197$ $n=198$ $n=199$ $n=200$ $n=201$ $n=202$ $n=203$ $n=204$ $n=205$ $n=206$ $n=207$ $n=208$ $n=209$ $n=210$ $n=211$ $n=212$ $n=213$ $n=214$ $n=215$ $n=216$ $n=217$ $n=218$ $n=219$ $n=220$ $n=221$ $n=222$ $n=223$ $n=224$ $n=225$ $n=226$ $n=227$ $n=228$ $n=229$ $n=230$ $n=231$ $n=232$ $n=233$ $n=234$ $n=235$ $n=236$ $n=237$ $n=238$ $n=239$ $n=240$ $n=241$ $n=242$ $n=243$ $n=244$ $n=245$ $n=246$ $n=247$ $n=248$ $n=249$ $n=250$ $n=251$ $n=252$ $n=253$ $n=254$ $n=255$ $n=256$ $n=257$ $n=258$ $n=259$ $n=260$ $n=261$ $n=262$ $n=263$ $n=264$ $n=265$ $n=266$ $n=267$ $n=268$ $n=269$ $n=270$ $n=271$ $n=272$ $n=273$ $n=274$ $n=275$ $n=276$ $n=277$ $n=278$ $n=279$ $n=280$ $n=281$ $n=282$ $n=283$ $n=284$ $n=285$ $n=286$ $n=287$ $n=288$ $n=289$ $n=290$ $n=291$ $n=292$ $n=293$ $n=294$ $n=295$ $n=296$ $n=297$ $n=298$ $n=299$ $n=300$ $n=301$ $n=302$ $n=303$ $n=304$ $n=305$ $n=306$ $n=307$ $n=308$ $n=309$ $n=310$ $n=311$ $n=312$ $n=313$ $n=314$ $n=315$ $n=316$ $n=317$ $n=318$ $n=319$ $n=320$ $n=321$ $n=322$ $n=323$ $n=324$ $n=325$ $n=326$ $n=327$ $n=328$ $n=329$ $n=330$ $n=331$ $n=332$ $n=333$ $n=334$ $n=335$ $n=336$ $n=337$ $n=338$ $n=339$ $n=340$ $n=341$ $n=342$ $n=343$ $n=344$ $n=345$ $n=346$ $n=347$ $n=348$ $n=349$ $n=350$ $n=351$ $n=352$ $n=353$ $n=354$ $n=355$ $n=356$ $n=357$ $n=358$ $n=359$ $n=360$ $n=361$ $n=362$ $n=363$ $n=364$ $n=365$ $n=366$ $n=367$ $n=368$ $n=369$ $n=370$ $n=371$ $n=372$ $n=373$ $n=374$ $n=375$ $n=376$ $n=377$ $n=378$ $n=379$ $n=380$ $n=381$ $n=382$ 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$n=508$ $n=509$ $n=510$ $n=511$ $n=512$ $n=513$ $n=514$ $n=515$ $n=516$ $n=517$ $n=518$ $n=519$ $n=520$ $n=521$ $n=522$ $n=523$ $n=524$ $n=525$ $n=526$ $n=527$ $n=528$ $n=529$ $n=530$ $n=531$ $n=532$ $n=533$ $n=534$ $n=535$ $n=536$ $n=537$ $n=538$ $n=539$ $n=540$ $n=541$ $n=542$ $n=543$ $n=544$ $n=545$ $n=546$ $n=547$ $n=548$ $n=549$ $n=550$ $n=551$ $n=552$ $n=553$ $n=554$ $n=555$ $n=556$ $n=557$ $n=558$ $n=559$ $n=560$ $n=561$ $n=562$ $n=563$ $n=564$ $n=565$ $n=566$ $n=567$ $n=568$ $n=569$ $n=570$ $n=571$ $n=572$ $n=573$ $n=574$ $n=575$ $n=576$ $n=577$ $n=578$ $n=579$ $n=580$ $n=581$ $n=582$ $n=583$ $n=584$ $n=585$ $n=586$ $n=587$ $n=588$ $n=589$ $n=590$ $n=591$ $n=592$ $n=593$ $n=594$ $n=595$ $n=596$ $n=597$ $n=598$ $n=599$ $n=600$ $n=601$ $n=602$ $n=603$ $n=604$ $n=605$ $n=606$ $n=607$ $n=608$ $n=609$ $n=610$ $n=611$ $n=612$ $n=613$ $n=614$ $n=615$ $n=616$ $n=617$ $n=618$ $n=619$ $n=620$ $n=621$ $n=622$ $n=623$ $n=624$ $n=625$ $n=626$ $n=627$ $n=628$ $n=629$ $n=630$ $n=631$ $n=632$ 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$n=758$ $n=759$ $n=760$ $n=761$ $n=762$ $n=763$ $n=764$ $n=765$ $n=766$ $n=767$ $n=768$ $n=769$ $n=770$ $n=771$ $n=772$ $n=773$ $n=774$ $n=775$ $n=776$ $n=777$ $n=778$ $n=779$ $n=780$ $n=781$ $n=782$ $n=783$ $n=784$ $n=785$ $n=786$ $n=787$ $n=788$ $n=789$ $n=790$ $n=791$ $n=792$ $n=793$ $n=794$ $n=795$ $n=796$ $n=797$ $n=798$ $n=799$ $n=800$ $n=801$ $n=802$ $n=803$ $n=804$ $n=805$ $n=806$ $n=807$ $n=808$ $n=809$ $n=810$ $n=811$ $n=812$ $n=813$ $n=814$ $n=815$ $n=816$ $n=817$ $n=818$ $n=819$ $n=820$ $n=821$ $n=822$ $n=823$ $n=824$ $n=825$ $n=826$ $n=827$ $n=828$ $n=829$ $n=830$ $n=831$ $n=832$ $n=833$ $n=834$ $n=835$ $n=836$ $n=837$ $n=838$ $n=839$ $n=840$ $n=841$ $n=842$ $n=843$ $n=844$ $n=845$ $n=846$ $n=847$ $n=848$ $n=849$ $n=850$ $n=851$ $n=852$ $n=853$ $n=854$ $n=855$ $n=856$ $n=857$ $n=858$ $n=859$ $n=860$ $n=861$ $n=862$ $n=863$ $n=864$ $n=865$ $n=866$ $n=867$ $n=868$ $n=869$ $n=870$ $n=871$ $n=872$ $n=873$ $n=874$ $n=875$ $n=876$ $n=877$ $n=878$ $n=879$ $n=880$ $n=881$ $n=882$ $n=883$ $n=884$ $n=885$ $n=886$ $n=887$ $n=888$ $n=889$ $n=890$ $n=891$ $n=892$ $n=893$ $n=894$ $n=895$ $n=896$ $n=897$ $n=898$ $n=899$ $n=900$ $n=901$ $n=902$ $n=903$ $n=904$ $n=905$ $n=906$ $n=907$ $n=908$ $n=909$ $n=910$ $n=911$ $n=912$ $n=913$ $n=914$ $n=915$ $n=916$ $n=917$ $n=918$ $n=919$ $n=920$ $n=921$ $n=922$ $n=923$ $n=924$ $n=925$ $n=926$ $n=927$ $n=928$ $n=929$ $n=930$ $n=931$ $n=932$ $n=933$ $n=934$ $n=935$ $n=936$ $n=937$ $n=938$ $n=939$ $n=940$ $n=941$ $n=942$ $n=943$ $n=944$ $n=945$ $n=946$ $n=947$ $n=948$ $n=949$ $n=950$ $n=951$ $n=952$ $n=953$ $n=954$ $n=955$ $n=956$ $n=957$ $n=958$ $n=959$ $n=960$ $n=961$ $n=962$ $n=963$ $n=964$ $n=965$ $n=966$ $n=967$ $n=968$ $n=969$ $n=970$ $n=971$ $n=972$ $n=973$ $n=974$ $n=975$ $n=976$ $n=977$ $n=978$ $n=979$ $n=980$ $n=981$ $n=982$ $n=983$ $n=984$ $n=985$ $n=986$ $n=987$ $n=988$ $n=989$ $n=990$ $n=991$ $n=992$ $n=993$ $n=994$ $n=995$ $n=996$ $n=997$ $n=998$ $n=999$ $n=1000$ $n=1001$ $n=1002$ $n=1003$ $n=1004$ $n=1005$ $n=1006$ $n=1007$ $n=1008$ $n=1009$ $n=1010$ $n=1011$ $n=1012$ $n=1013$ $n=1014$ $n=1015$ $n=1016$ $n=1017$ $n=1018$ $n=1019$ $n=1020$ $n=1021$ $n=1022$ $n=1023$ $n=1024$ $n=1025$ $n=1026$ $n=1027$ $n=1028$ $n=1029$ $n=1030$ $n=1031$ $n=1032$ $n=1033$ $n=1034$ $n=1035$ $n=1036$ $n=1037$ $n=1038$ $n=1039$ $n=1040$ $n=1041$ $n=1042$ $n=1043$ $n=1044$ $n=1045$ $n=1046$ $n=1047$ $n=1048$ $n=1049$ $n=1050$ $n=1051$ $n=1052$ $n=1053$ $n=1054$ $n=1055$ $n=1056$ $n=1057$ $n=1058$ $n=1059$ $n=1060$ $n=1061$ $n=1062$ $n=1063$ $n=1064$ $n=1065$ $n=1066$ $n=1067$ $n=1068$ $n=1069$ $n=1070$ $n=1071$ $n=1072$ $n=1073$ $n=1074$ $n=1075$ $n=1076$ $n=1077$ $n=1078$ $n=1079$ $n=1080$ $n=1081$ $n=1082$ $n=1083$ $n=1084$ $n=1085$ $n=1086$ $n=1087$ $n=1088$ $n=1089$ $n=1090$ $n=1091$ $n=1092$ $n=1093$ $n=1094$ $n=1095$ $n=1096$ $n=1097$ $n=1098$ $n=1099$ $n=1100$ $n=1101$ $n=1102$ $n=1103$ $n=1104$ $n=1105$ $n=1106$ $n=1107$ $n=1108$ $n=1109$ $n=1110$ $n=1111$ $n=1112$ $n=1113$ $n=1114$ $n=1115$ $n=1116$ $n=1117$ $n=1118$ $n=1119$ $n=1120$ $n=1121$ $n=1122$ $n=1123$ $n=1124$ $n=1125$ $n=1126$ $n=1127$ $n=1128$ $n=1129$ $n=1130$ $n=1131$ $n=1132$ $n=1133$ $n=1134$ $n=1135$ $n=1136$ $n=1137$ $n=1138$ $n=1139$ $n=1140$ $n=1141$ $n=1142$ $n=1143$ $n=1144$ $n=1145$ $n=1146$ $n=1147$ $n=1148$ $n=1149$ $n=1150$ $n=1151$ $n=1152$ $n=1153$ $n=1154$ $n=1155$ $n=1156$ $n=1157$ $n=1158$ $n=1159$ $n=1160$ $n=1161$ $n=1162$ $n=1163$ $n=1164$ $n=1$