

نام و نام خانوادگی علی مسعود حسینی پاسخنامه تشریحی تکلیف شماره ۱۰ کلاس دوازدهم سپهر ۱۳۹۶

$$f(x) \Rightarrow \frac{1}{x} \Rightarrow x - \frac{1}{x} \longrightarrow \boxed{f^{-1}(x) \Rightarrow \frac{1}{x} \Rightarrow x + \frac{1}{x}}$$

$$x \rightarrow \bullet \rightarrow \frac{1}{16}$$

$$y_{20} \rightarrow \frac{1}{x} x + \frac{1}{x} \cdot 0 \rightarrow x + 1 = 0 \Rightarrow x = -1$$

$$\left| \frac{a}{r} \right| \Rightarrow \left| \frac{-1}{\sqrt{2}} \right| = \frac{1}{\sqrt{2}} \rightarrow \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

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(الف) $f_1 \rightarrow (-\infty, 1)$ منقطع $f_2 \rightarrow (1, 2) \rightarrow f_3 \rightarrow (2, 3)$ $f_4 \rightarrow (3, 4)$ $f_5 \rightarrow (4, 5)$ $f_6 \rightarrow (5, 6)$ $f_7 \rightarrow (6, 7)$ $f_8 \rightarrow (7, 8)$ $f_9 \rightarrow (8, 9)$ $f_{10} \rightarrow (9, 10)$ $f_{11} \rightarrow (10, 11)$ $f_{12} \rightarrow (11, 12)$ $f_{13} \rightarrow (12, 13)$ $f_{14} \rightarrow (13, 14)$ $f_{15} \rightarrow (14, 15)$ $f_{16} \rightarrow (15, 16)$ $f_{17} \rightarrow (16, 17)$ $f_{18} \rightarrow (17, 18)$ $f_{19} \rightarrow (18, 19)$ $f_{20} \rightarrow (19, 20)$ $f_{21} \rightarrow (20, 21)$ $f_{22} \rightarrow (21, 22)$ $f_{23} \rightarrow (22, 23)$ $f_{24} \rightarrow (23, 24)$ $f_{25} \rightarrow (24, 25)$ $f_{26} \rightarrow (25, 26)$ $f_{27} \rightarrow (26, 27)$ $f_{28} \rightarrow (27, 28)$ $f_{29} \rightarrow (28, 29)$ $f_{30} \rightarrow (29, 30)$ $f_{31} \rightarrow (30, 31)$ $f_{32} \rightarrow (31, 32)$ $f_{33} \rightarrow (32, 33)$ $f_{34} \rightarrow (33, 34)$ $f_{35} \rightarrow (34, 35)$ $f_{36} \rightarrow (35, 36)$ $f_{37} \rightarrow (36, 37)$ $f_{38} \rightarrow (37, 38)$ $f_{39} \rightarrow (38, 39)$ $f_{40} \rightarrow (39, 40)$ $f_{41} \rightarrow (40, 41)$ $f_{42} \rightarrow (41, 42)$ $f_{43} \rightarrow (42, 43)$ $f_{44} \rightarrow (43, 44)$ $f_{45} \rightarrow (44, 45)$ $f_{46} \rightarrow (45, 46)$ $f_{47} \rightarrow (46, 47)$ $f_{48} \rightarrow (47, 48)$ $f_{49} \rightarrow (48, 49)$ $f_{50} \rightarrow (49, 50)$ $f_{51} \rightarrow (50, 51)$ $f_{52} \rightarrow (51, 52)$ $f_{53} \rightarrow (52, 53)$ $f_{54} \rightarrow (53, 54)$ $f_{55} \rightarrow (54, 55)$ $f_{56} \rightarrow (55, 56)$ $f_{57} \rightarrow (56, 57)$ $f_{58} \rightarrow (57, 58)$ $f_{59} \rightarrow (58, 59)$ $f_{60} \rightarrow (59, 60)$ $f_{61} \rightarrow (60, 61)$ $f_{62} \rightarrow (61, 62)$ $f_{63} \rightarrow (62, 63)$ $f_{64} \rightarrow (63, 64)$ $f_{65} \rightarrow (64, 65)$ $f_{66} \rightarrow (65, 66)$ $f_{67} \rightarrow (66, 67)$ $f_{68} \rightarrow (67, 68)$ $f_{69} \rightarrow (68, 69)$ $f_{70} \rightarrow (69, 70)$ $f_{71} \rightarrow (70, 71)$ $f_{72} \rightarrow (71, 72)$ $f_{73} \rightarrow (72, 73)$ $f_{74} \rightarrow (73, 74)$ $f_{75} \rightarrow (74, 75)$ $f_{76} \rightarrow (75, 76)$ $f_{77} \rightarrow (76, 77)$ $f_{78} \rightarrow (77, 78)$ $f_{79} \rightarrow (78, 79)$ $f_{80} \rightarrow (79, 80)$ $f_{81} \rightarrow (80, 81)$ $f_{82} \rightarrow (81, 82)$ $f_{83} \rightarrow (82, 83)$ $f_{84} \rightarrow (83, 84)$ $f_{85} \rightarrow (84, 85)$ $f_{86} \rightarrow (85, 86)$ $f_{87} \rightarrow (86, 87)$ $f_{88} \rightarrow (87, 88)$ $f_{89} \rightarrow (88, 89)$ $f_{90} \rightarrow (89, 90)$ $f_{91} \rightarrow (90, 91)$ $f_{92} \rightarrow (91, 92)$ $f_{93} \rightarrow (92, 93)$ $f_{94} \rightarrow (93, 94)$ $f_{95} \rightarrow (94, 95)$ $f_{96} \rightarrow (95, 96)$ $f_{97} \rightarrow (96, 97)$ $f_{98} \rightarrow (97, 98)$ $f_{99} \rightarrow (98, 99)$ $f_{100} \rightarrow (99, 100)$ $f_{101} \rightarrow (100, 101)$ $f_{102} \rightarrow (101, 102)$ $f_{103} \rightarrow (102, 103)$ $f_{104} \rightarrow (103, 104)$ $f_{105} \rightarrow (104, 105)$ $f_{106} \rightarrow (105, 106)$ $f_{107} \rightarrow (106, 107)$ $f_{108} \rightarrow (107, 108)$ $f_{109} \rightarrow (108, 109)$ $f_{110} \rightarrow (109, 110)$ $f_{111} \rightarrow (110, 111)$ $f_{112} \rightarrow (111, 112)$ $f_{113} \rightarrow (112, 113)$ $f_{114} \rightarrow (113, 114)$ $f_{115} \rightarrow (114, 115)$ $f_{116} \rightarrow (115, 116)$ $f_{117} \rightarrow (116, 117)$ $f_{118} \rightarrow (117, 118)$ $f_{119} \rightarrow (118, 119)$ $f_{120} \rightarrow (119, 120)$ $f_{121} \rightarrow (120, 121)$ $f_{122} \rightarrow (121, 122)$ $f_{123} \rightarrow (122, 123)$ $f_{124} \rightarrow (123, 124)$ $f_{125} \rightarrow (124, 125)$ $f_{126} \rightarrow (125, 126)$ $f_{127} \rightarrow (126, 127)$ $f_{128} \rightarrow (127, 128)$ $f_{129} \rightarrow (128, 129)$ $f_{130} \rightarrow (129, 130)$ $f_{131} \rightarrow (130, 131)$ $f_{132} \rightarrow (131, 132)$ $f_{133} \rightarrow (132, 133)$ $f_{134} \rightarrow (133, 134)$ $f_{135} \rightarrow (134, 135)$ $f_{136} \rightarrow (135, 136)$ $f_{137} \rightarrow (136, 137)$ $f_{138} \rightarrow (137, 138)$ $f_{139} \rightarrow (138, 139)$ $f_{140} \rightarrow (139, 140)$ $f_{141} \rightarrow (140, 141)$ $f_{142} \rightarrow (141, 142)$ $f_{143} \rightarrow (142, 143)$ $f_{144} \rightarrow (143, 144)$ $f_{145} \rightarrow (144, 145)$ $f_{146} \rightarrow (145, 146)$ $f_{147} \rightarrow (146, 147)$ $f_{148} \rightarrow (147, 148)$ $f_{149} \rightarrow (148, 149)$ $f_{150} \rightarrow (149, 150)$ $f_{151} \rightarrow (150, 151)$ $f_{152} \rightarrow (151, 152)$ $f_{153} \rightarrow (152, 153)$ $f_{154} \rightarrow (153, 154)$ $f_{155} \rightarrow (154, 155)$ $f_{156} \rightarrow (155, 156)$ $f_{157} \rightarrow (156, 157)$ $f_{158} \rightarrow (157, 158)$ $f_{159} \rightarrow (158, 159)$ $f_{160} \rightarrow (159, 160)$ $f_{161} \rightarrow (160, 161)$ $f_{162} \rightarrow (161, 162)$ $f_{163} \rightarrow (162, 163)$ $f_{164} \rightarrow (163, 164)$ $f_{165} \rightarrow (164, 165)$ $f_{166} \rightarrow (165, 166)$ $f_{167} \rightarrow (166, 167)$ $f_{168} \rightarrow (167, 168)$ $f_{169} \rightarrow (168, 169)$ $f_{170} \rightarrow (169, 170)$ $f_{171} \rightarrow (170, 171)$ $f_{172} \rightarrow (171, 172)$ $f_{173} \rightarrow (172, 173)$ $f_{174} \rightarrow (173, 174)$ $f_{175} \rightarrow (174, 175)$ $f_{176} \rightarrow (175, 176)$ $f_{177} \rightarrow (176, 177)$ $f_{178} \rightarrow (177, 178)$ $f_{179} \rightarrow (178, 179)$ $f_{180} \rightarrow (179, 180)$ $f_{181} \rightarrow (180, 181)$ $f_{182} \rightarrow (181, 182)$ $f_{183} \rightarrow (182, 183)$ $f_{184} \rightarrow (183, 184)$ $f_{185} \rightarrow (184, 185)$ $f_{186} \rightarrow (185, 186)$ $f_{187} \rightarrow (186, 187)$ $f_{188} \rightarrow (187, 188)$ $f_{189} \rightarrow (188, 189)$ $f_{190} \rightarrow (189, 190)$ $f_{191} \rightarrow (190, 191)$ $f_{192} \rightarrow (191, 192)$ $f_{193} \rightarrow (192, 193)$ $f_{194} \rightarrow (193, 194)$ $f_{195} \rightarrow (194, 195)$ $f_{196} \rightarrow (195, 196)$ $f_{197} \rightarrow (196, 197)$ $f_{198} \rightarrow (197, 198)$ $f_{199} \rightarrow (198, 199)$ $f_{200} \rightarrow (199, 200)$ $f_{201} \rightarrow (200, 201)$ f

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$$\frac{-b}{2a} \Rightarrow (1) \quad f_{11} \Rightarrow (4)$$

(ب) $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (100%) $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (100%) $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (100%)

$$y = (n-1)^2 + p \rightarrow \sqrt{y-p} + 1 = n \rightarrow \boxed{-x-2+1=y} \rightarrow \text{باستفاده از این رابطه} \rightarrow \boxed{[y, \infty)}$$

$$f(n) \Rightarrow 2n - \sqrt{14 - 4n + 2n^2} \rightarrow 2n - \sqrt{(2n - 2)^2} \Rightarrow 2n - |2n - 2| \rightarrow$$

$$\begin{cases} 2n - 2n + 2 & n \geq 2 \\ 2n - 2n + 2 & n \leq 2 \end{cases} \Rightarrow \begin{cases} 2 & n \geq 2 \\ 2n - 2 & n \leq 2 \end{cases} \rightarrow Rf \Rightarrow 2 \rightarrow \text{دارن زیرست.}$$

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


بنابر این داریم: $\frac{0.1}{0.1} \rightarrow$ یک به یک است $\rightarrow 0.1 \Rightarrow \frac{0.1}{0.1}$

$$R_f \rightarrow R \cdot [0, 1]$$

$$y = \frac{x}{\sqrt{x^2 - a^2}} \Rightarrow y^2 = \frac{x^2}{x^2 - a^2} \Rightarrow y^2 x^2 - a^2 y^2 = x^2 \Rightarrow y^2 x^2 - x^2 = a^2 y^2 \Rightarrow x^2 (y^2 - 1) = a^2 y^2$$

$$\rightarrow x^r(y^r-1) = \Delta y^r \Rightarrow x^r = \frac{\Delta y^r}{y^r-1} = x = \frac{\sqrt{a} y}{\sqrt{y^r-1}} \xrightarrow{\text{use } y = \frac{\sqrt{a} x}{\sqrt{x^r-1}}} \left(R = \frac{\sqrt{a}}{\sqrt{a}-1} \right)$$

$$g(r) \rightarrow \boxed{K}$$

$$-n^2 + 4n + 4k - \frac{(r)}{1,2} - \sum + 1r + 4k \leq k \Rightarrow rk \leq -1 \rightarrow \boxed{k \leq -1}$$

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$$n \begin{cases} n > 0 \\ n < 0 \end{cases} \Rightarrow \begin{cases} n > 0 \\ n < 0 \end{cases} \Rightarrow \begin{cases} n > 0 \\ n < 0 \end{cases} \Rightarrow \begin{cases} n > 0 \\ n < 0 \end{cases}$$

$$\frac{x(b+a)}{x(a-b)} = \frac{\frac{x}{2}}{\frac{x}{8}} \Rightarrow \frac{b+a}{a-b} = \frac{1}{4} \rightarrow 4b+4a=a-b \Rightarrow a=5b$$

$$a \times b = \frac{1}{a} \times \frac{1}{b} = \frac{1}{ab} \rightarrow \frac{1}{4 \times 5} = \frac{1}{20}$$

$$b-a \Rightarrow \frac{1}{4} \Rightarrow 2b = \frac{1}{2} \Rightarrow b = \frac{1}{4} \Rightarrow a = \frac{5}{4}$$

$$\frac{y+z}{m} \Rightarrow -10 \Rightarrow \frac{1}{m} = -10 \Rightarrow -(y+m) = 0 \Rightarrow -y-m = 0 \Rightarrow m = -y$$

$$\frac{y+z}{x+y} \Rightarrow f(x) \Rightarrow y+z = y+z \rightarrow y-z \Rightarrow y-z = x(y-z) \rightarrow y-z = x(y-z)$$

$$\rightarrow x = \frac{y-z}{y-z} \Rightarrow R_f \Rightarrow R-f-z \quad f \circ f^{-1}(x) + f^{-1}(x) \Rightarrow x \quad \frac{y-z}{y-z} = 1 \Rightarrow x = 1$$

$$f(y-z) = y-z \Rightarrow y-z = -z \Rightarrow g(z) = y \Rightarrow g(y) = \frac{y}{y}$$

$$g^{-1}(y) + f^{-1}(y) = g(y) + y-z = y+z-y = z$$

$$y = \frac{-\omega n - 14}{1+n} \rightarrow \frac{\omega n + 14}{1+n} \xrightarrow{\text{C.S.}} \frac{\omega(n-1) + 14}{1+(n-1)} - 14 \rightarrow$$

$$\rightarrow \frac{\omega n + 14}{n-1} - 14 \rightarrow \frac{\omega n + 14 - 14n + 14}{n-1} \rightarrow \frac{\omega n + 4}{n-1} = f(x) \rightarrow f^{-1}(x) = \frac{n+4}{n-1}$$

$$\frac{x+4}{n-1} = \frac{y+4}{n-1} \Rightarrow (x-1)(y+4) = (n-1)(y+4) \Rightarrow x = n \Rightarrow \frac{x+4}{n-1} = \frac{n+4}{n-1}$$

$$(1+n, n)$$

$$\{n+m, f(n) = n = \{m\} \rightarrow n \in \mathbb{N}\}$$

$$\{n-y, m\} \Rightarrow \{n+m, y\}$$

$$y = f(n) - g(n)$$

$$y + \{n\} - x + \{n\} \Rightarrow \{n\} + \{n\}$$

$$\frac{y}{\omega} = n \Rightarrow g(n) = n - \{n\}$$