

نام و نام خانوادگی: پانزدهم شهریور ۱۳۹۷ پاسخنامه تشریحی تکلیف شماره ۲۰ کلاس: دوازدهم بهار ۱۳۹۷

$$f(x) = x^2 + 2x + 1 + 9x^2 - 2x + 1 + mx^2 + nx + mn \xrightarrow{f'=0} m = -10, n = 4$$

$$g(x) = \{(2, m), (n, p+1), (p+2, -1), (-9, p+k)\} \rightarrow g(2) = -10 = p+1 \Rightarrow p = -11$$

$$(4, -1), (4, p+1)$$

$$g(p+2) = g(-9) \Rightarrow -1 = p+k \rightarrow k = 10 \Rightarrow m+n+p+k = -7$$

$$y = \sqrt{\frac{x-2}{(x^2-4)(x^2+2)}} \quad \frac{-2}{-1} + \frac{2}{1} \rightarrow x \in (-2, 2) \cup (2, +\infty)$$

$$f(x) = \frac{2x^2+1}{4-2[-x]} \rightarrow 4-2[-x] = 0 \rightarrow [-x] = 2 \rightarrow -2 \leq x < 3 \rightarrow -3 < x \leq -2$$

$$x \in \mathbb{R} - (-3, -2)$$

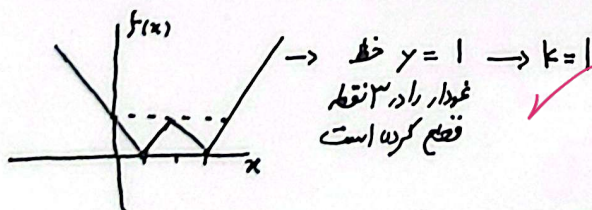
$$f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}} \quad \begin{cases} \text{I } x(x^2-1) \geq 0 \rightarrow \frac{-1}{-1} + \frac{1}{1} \\ \text{II } |x|+x > 0 \rightarrow \frac{-1}{-1} + \frac{1}{1} \end{cases} \rightarrow x \in [1, +\infty)$$

$$f(x) = \frac{\sqrt{|x-2|-x^2}}{|x|-1} \rightarrow |x-2| \geq x^2 \rightarrow x > 2: x^2 \leq x-2 \rightarrow x^2-x+2 \leq 0 \rightarrow \emptyset$$

$$|x|-1 \rightarrow x \neq \pm 1 \quad \rightarrow x \leq 2: x^2 \leq 2-x \rightarrow x^2+x-2 = (x+2)(x-1) \leq 0$$

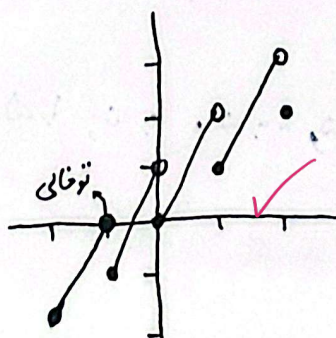
$$x \in [-2, -1) \cup (-1, 1)$$

$$y = \frac{1}{|x-2|-1-k} \quad f(x) = |x-2|-1 = k$$



$$y = 2x - [x]$$

$$y = \begin{cases} 2x - (-2) & -2 \leq x < -1 \\ 2x - (-1) & -1 \leq x < 0 \\ 2x - (0) & 0 \leq x < 1 \\ 2x - (1) & 1 \leq x < 2 \\ 2x - 2 & x = 2 \end{cases}$$



$$y = \frac{x^2 - 2x + 3}{x + a} + b = \frac{(x-1)(x-2)}{x+a} + b$$

$$\begin{aligned} \rightarrow a = -1: y = x - 2 + b = x \rightarrow b = 2 \rightarrow a - b = -2 \\ \hookrightarrow a = -2: y = x - 1 + b = x \rightarrow b = 1 \rightarrow a - b = -2 \end{aligned} \quad \left. \vphantom{\begin{aligned} \rightarrow a = -1: y = x - 2 + b = x \rightarrow b = 2 \rightarrow a - b = -2 \\ \hookrightarrow a = -2: y = x - 1 + b = x \rightarrow b = 1 \rightarrow a - b = -2 \end{aligned}} \right\} \{-2\}$$

$$f(x) = g(x) \xrightarrow{x=0} f(0) = g(0) \Rightarrow c = 2$$

$$\begin{aligned} \hookrightarrow f(1) = g(1) \rightarrow \frac{a+2}{b+1} = 2 \rightarrow a+2 = 2b+2 \\ \hookrightarrow f(-1) = g(-1) \rightarrow \frac{1-a}{b-1} = 1 \rightarrow 1-a = b-1 \end{aligned} \quad \left. \vphantom{\begin{aligned} \hookrightarrow f(1) = g(1) \rightarrow \frac{a+2}{b+1} = 2 \rightarrow a+2 = 2b+2 \\ \hookrightarrow f(-1) = g(-1) \rightarrow \frac{1-a}{b-1} = 1 \rightarrow 1-a = b-1 \end{aligned}} \right\} \begin{aligned} a &= \frac{a}{2} \\ b &= \frac{1}{2} \rightarrow b+c = 2,5 \end{aligned}$$

$$D_f: x \geq \frac{3a}{4}, D_g: x \leq \frac{b}{4} \rightarrow D_{f \cap g} = \{1\} = D_{f \cap g}: \frac{3a}{4} \leq x \leq \frac{b}{4} \rightarrow \frac{b}{4} = \frac{3a}{4} = 1$$

$$\begin{aligned} (f-g)(1) &= f(1) - g(1) = f(1) = \sqrt{1-1} + k - 1 = k - 1 \\ g(1) &= \sqrt{1-1} + 2k = 2k \\ &= 1k - 2k = -k \rightarrow k = -1 \end{aligned}$$

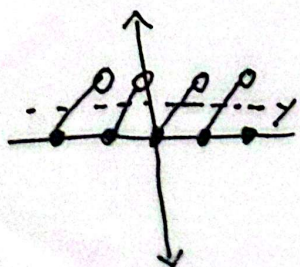
$$3a = \frac{b}{4} - k = 2 \quad \checkmark$$

$$D_f = (-\infty, m], D_g = [-1, +\infty) \rightarrow D_{f+g} = D_f \cap D_g = [-1, +\infty) \rightarrow m = 1$$

$$f(x) = \sqrt{1-x} + n, g(x) = \sqrt{x} \rightarrow f(x) - g(x) = \sqrt{1-x} + n - \sqrt{x} = 1\sqrt{1-x} \rightarrow n = 1\sqrt{1-x}$$

$$m+n = 1\sqrt{1-x} + a \quad \checkmark$$

$$y = (x - [x])(-1)^x = \frac{1}{x}$$



$$y = \frac{1}{x} \rightarrow x = -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100$$