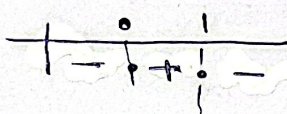
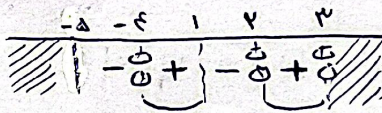


19,8

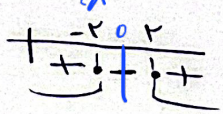
نام و نام خانوادگی فریاد محمد زینب پاسخنامه تشریحی تکلیف شماره کلاس پایه دهم ریاضی A

$f(x) = \frac{1}{\sqrt{x-2}} - 1 \rightarrow f(x+1) = \frac{1}{\sqrt{x+1-2}} - 1 \rightarrow f(x+1) = \frac{1}{\sqrt{x-1}} - 1$
 $y = \sqrt{x^2 f(x+1)}$
 $x^2 f(x+1) \geq 0 \rightarrow$  $\rightarrow D_f = [0, 1]$

$f(-x) = \sqrt{-x+1-x+2}$
 $-x+1-x+2 \geq 0 \rightarrow x \leq 1-x+2 \xrightarrow{(\cdot)^2} x^2 \leq x^2 - 4x + 4 \rightarrow 4x \leq 4$
 $\rightarrow x \leq 1$
 $D_f = (-\infty, 1]$

$y = \sqrt{\frac{x-1}{f(x)}}$
 $\frac{x-1}{f(x)} \geq 0$
 $x = -1, 2, 3$

 $D_f = (-1, 2] \cup (2, 3)$

$y_1 = \frac{1}{9x^2 - 7x^2 - 4x - 3} \rightarrow 9x^2 - 7x^2 - 4x - 3 \neq 0 \rightarrow 2x^2 - 4x - 3 \neq 0$
 $(2x^2 - 1)^2 - (x+2)^2 \neq 0$
 $(2x^2 - 1)^2 = (x+2)^2 \rightarrow |2x^2 - 1| = |x+2|$
 $2x^2 - 1 = x + 2 \rightarrow 2x^2 - x - 3 = 0$
 $2x^2 - 1 = -x - 2 \rightarrow 2x^2 + x + 1 = 0 \rightarrow \Delta < 0$
 $2x^2 - x - 3 = 2x^2 + ax + b \rightarrow a = -1, b = -3$
 $\sqrt{-(-1-3)} = 2$

$f(\frac{x}{2}) = (\frac{x}{2})^2 + \frac{x}{2}$
 $y = \sqrt{f(x) - f(\frac{x}{2})}$
 $f(x) - f(\frac{x}{2}) \geq 0 \rightarrow x^2 + x - (\frac{x}{2})^2 - \frac{x}{2} \geq 0$
 $x^2 - (\frac{x}{2})^2 + x - \frac{x}{2} \geq 0 \rightarrow (x - \frac{x}{2})(x^2 + x + \frac{14}{2x}) + (x - \frac{x}{2}) \geq 0$
 $\rightarrow x - \frac{x}{2} \geq 0 \rightarrow x \geq \frac{x}{2}$
 $x = \pm 2, x \neq 0$

 $D_f = (-\infty, -2] \cup [2, +\infty)$

$f(1) \rightarrow x^3 + x = 1 \rightarrow x^3 + x - 1 = 0 \rightarrow (x-2)(x^2 + 2x + 4) + (x-2) = 0$
 $(x-2)(x^2 + 2x + 4) = 0 \rightarrow x-2 = 0 \rightarrow x=2 \rightarrow f(1) = 2(2)^2 - 1 = 7$
 جمع ضرایب منفی ← بر (x-1) بخش پذیر
 $f(2) \rightarrow x^3 + x = 2 \rightarrow x^3 + x - 2 = 0 \rightarrow (x-1)(x^2 + x + 2) = 0 \rightarrow x-1 = 0 \rightarrow x=1$
 $f(2) = 2(1)^2 - 1 = 1$
 $f(2) + f(1) = 7 + 1 = 8$

$f(x) = x^3 - 4x^2 + 12x + 8 - 8 \rightarrow (x-2)^3 + 8 \rightarrow f(\sqrt[3]{2} + 2) = (\sqrt[3]{2} + 2)^3 + 8 = 1$
 $g(x) = x^3 + 9x^2 + 27x + 27 - 27 \rightarrow (x+3)^3 - 27 \rightarrow g(\sqrt[3]{2} - 3) = (\sqrt[3]{2} - 3)^3 - 27 = -2$
 $\frac{g(\sqrt[3]{2} - 3)}{f(\sqrt[3]{2} + 2)} = \frac{-2}{1} = -2$

$f(x) + g(x) = \sqrt{x+4}\sqrt{x-4} + \sqrt{x-4}\sqrt{x-4} = \sqrt{x-4+4}\sqrt{x-4+4} + \sqrt{x-4-4}\sqrt{x-4-4}$
 $= \sqrt{x-4+4}^2 + \sqrt{x-4-4}^2 = |\sqrt{x-4+4}| + |\sqrt{x-4-4}| \rightarrow \begin{cases} \sqrt{x-4+4} + \sqrt{x-4-4} & x \geq 4 \\ \sqrt{x-4+4} - \sqrt{x-4-4} & 4 < x < 8 \end{cases}$
 $\textcircled{1} \rightarrow 0 + 2\sqrt{x-4} \rightarrow a=0 \quad b=2 \quad c=-4$
 $\textcircled{2} \rightarrow 4 + 0\sqrt{x-4} \rightarrow a=4 \quad b=0 \quad c=-4$
 $\frac{a+b}{c} \rightarrow \begin{cases} \frac{0+2}{-4} = -\frac{1}{2} \checkmark \\ \frac{4+0}{-4} = -1 \times \end{cases}$

$f(x) = \frac{x+2}{x^2-4x+3} \rightarrow D_f = \mathbb{R} - \{1, 3\} \quad D_g = \{2, 0, 3, 1\}$
 $D_f \cap D_g = \{0, 2\}$
 $\frac{g}{f} \rightarrow f(x) \neq 0 \rightarrow x \neq -2 \Rightarrow \frac{g}{f} = \{(2, \frac{1}{2}), (0, 4)\}$
 $f(2) = \frac{4}{-4} = -1 \quad g(2) = 1 \rightarrow \frac{1}{-1} = -1$
 $f(0) = \frac{2}{3} \quad g(0) = 4 \rightarrow \frac{4}{\frac{2}{3}} = 6$

باید درایه های اول را مساوی 2 و 1 قرار داده و درایه جدید را بدست آوریم مثلا $2x=1 \rightarrow x=\frac{1}{2}$

$f(x^2) = \{(1, 2), (1, 2), (\sqrt{3}, -1), (\sqrt{3}, -1), (2, 2), (2, 2)\}$
 درایه های اول را مساوی 2 قرار داده و درایه های جدید را بدست آوریم مثلا $x^2=1 \rightarrow x=\pm 1$

$2g^2(x) + 1 = \{(2, 19), (1, 3), (3, 9), (-1, 1)\}$
 درایه های دوم را به توان 2 رسانده و دوباره بری کنیم و باید جمع می کنیم.

$D_f \cap D_g = \{1, 3, -1\} \quad \frac{2f}{g} = \{(1, -4), (3, -1), (-1, -\frac{1}{2})\} = \{(1, -4), (3, -1)\}$