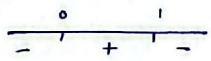
نام و نام خانوادگی ...زهرا یزدانیان... پاسخنامه تشریحی تکلیف شماره ...۵... کلاس ...دهم رشته...

۱

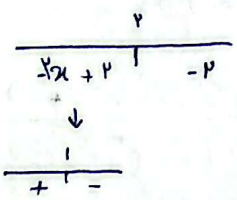
$y = \sqrt{x^3 f(x+1)} = \sqrt{x^3\left(\left(\frac{1}{2}\right)^{x-1} - 1\right)} \geq 0$



$D_f = [0,1]$

۲

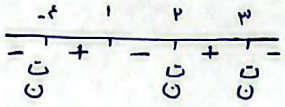
$f(x) = \sqrt{x + |x+2|} \longrightarrow$ if $x = -x \longrightarrow f(-x) = \sqrt{-x + |-x+2|}$



$D_f = (-\infty, 1]$

۳

$y = \sqrt{\frac{x-1}{f(x)}}$



$D_f = (-4,1] \cup (2,3)$

۴

$y = \frac{1}{9x^4 - \sqrt{x^2 - 6x - 3}} \longrightarrow (3x^2-1)^2 - (x+2)^2 = (3x^2-1-x-2)(3x^2-1+x+2)$

$\downarrow$ ریشه ندارد $\hookrightarrow$

$3x^2 + ax + b = 3x^2 - x - 3$

$3x^2 - x - 3$

$\left.\begin{matrix} a = -1 \\ b = -3 \end{matrix}\right\} \sqrt{-(a+b)} = \sqrt{4} = 2$

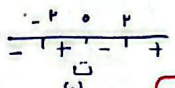
۵

$f(x) - f\left(\frac{4}{x}\right) = x^3 + x - \frac{64}{x^3} + \frac{4}{x} = \frac{x^6 + x^4 - 4x^2 - 64}{x^3} \cdot t^3 + t^2 - 4t - 64 =$

$(t-4)(t^2 + 5t + 16)$

$\downarrow$ ریشه ندارد $\hookrightarrow$

$x^2 - 4$



$D_f = [-2,0) \cup [2,+\infty)$

۶

$x^3 + x = 2 \longrightarrow x = 1$

$x^3 + x = 10 \longrightarrow x = 2$

$f(2) + f(10) = 1 + 7 = \boxed{8}$

۷

$f(x) = x^3 - 6x^2 + 12x = (x-2)^3 + 8$

$g(x) = x^3 + 6x + 27x = (x+3)^3 - 27$

$$\frac{g(\sqrt[3]{7} - 3)}{f(\sqrt[3]{2} + 2)} = \frac{(\sqrt[3]{7} - 3 + 3)^3 - 27}{(\sqrt[3]{2} + 2 - 2) + 8} = \frac{-20}{10} = \boxed{-2}$$

۸

$$\sqrt{x + 4\sqrt{x-5}} + \sqrt{x - 4\sqrt{x-5}} = \sqrt{(\sqrt{x-5} + 2)^2} + \sqrt{(\sqrt{x-5} - 2)^2} = 4\sqrt{x-5}$$

$a + b\sqrt{x+c} = 4\sqrt{x-5}$

$$\left.\begin{array}{l} a = 0 \\ b = 4 \\ c = -5 \end{array}\right\} \quad \frac{a+b}{c} = \boxed{-\frac{1}{5}}$$

۹

$f(x) = \{(2, -5), (0, \frac{3}{8})\}$

$\frac{g}{f} = \{(2, -\frac{1}{5})(0, 9)\}$

۱۰

$f(2x) = \{(\frac{1}{2}, 2)(\frac{3}{2}, -1)(2, 2)(-\frac{1}{2}, 9)\}$

$f(x^2) = \{(\pm 1, 2)(\pm\sqrt{3}, -1)(\pm 2, 2)\}$

$2g^2(x) + 1 = \{(-2, 19)(1, 2)(3, 9)(-1, 1)\}$

$\frac{2f}{g} = \{(1, -5)(3, -1)\}$