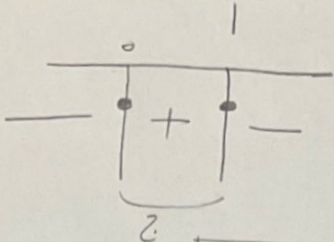
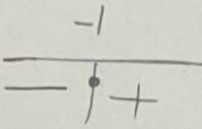
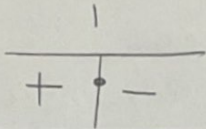
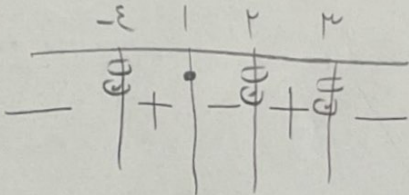


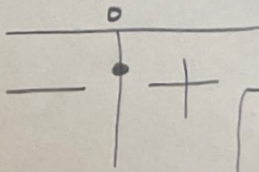
$x^2 f(x+1) \geq 0$   
 $\downarrow$   
 $x=0$   
 $\left(\frac{1}{x}\right)^{x-1} = 1$   
 $\hookrightarrow x-1=1 \Rightarrow x=2$   
  
 $D_f = [0, 1]$

$f(x) = \sqrt{x+|x+2|} \Rightarrow x=-1$   
  
 $D_{f(x)} = [-1, +\infty)$   
 $\downarrow x-1$

$f(x) = \sqrt{-x-|x+2|} \geq 0$   
 $\hookrightarrow x=1$   
  
 $D_{f(x)} = (-\infty, 1]$

$\frac{x-1}{f(x)} \geq 0$   
  
 $D_f = (-1, 1] \cup (2, 3)$

$\frac{1}{9x^2 - \sqrt{x^2 - x - 3}} = \frac{1}{(x^2 + x + 1)(x^2 - x - 3)} = \frac{1}{x^2 + ax + b}$   
 $\hookrightarrow x^2 - x - 3 = x^2 + ax + b$   
 $\sqrt{\frac{-(-1-3)}{1}} = 2$   
 $a = -1, b = -3$

$f(x) - f\left(\frac{x}{x}\right) \geq 0$   
 $\downarrow$   
 $x(x+1)$   
 $\downarrow$   
 $x(x+1)$   
  
 $D_f = [0, +\infty)$

$$\begin{aligned} x^3 + x = 2 &\rightarrow x^3 + x - 2 = 0 \xrightarrow{0 = 2^2} x = 1 \\ x^3 + x = 1 &\rightarrow x^3 + x - 1 = 0 \xrightarrow{\text{حل اول}} x = 2 \end{aligned}$$

$$\begin{aligned} f(1) &= 1(1) - 1 = 1 \\ f(1) &= 1(1) - 1 = 1 \Rightarrow f(1) + f(1) = \boxed{2} \end{aligned}$$

$$f(n) = (n-2)^3 + 1 = 14$$

$$\sqrt[3]{14+2}$$

$$\frac{-1}{14} = \boxed{-\frac{1}{14}}$$

$$g(n) = (n+3)^3 - 27 = -27$$

$$\sqrt[3]{-27}$$

$$t = \sqrt{n-2} \rightarrow f(n) = \sqrt{t^2 + 2t + 2} = \sqrt{(t+1)^2} = t+1$$

$$g(n) = \sqrt{t^2 - 2t + 2} \rightarrow \sqrt{(t-1)^2} = |t-1|$$

$$n \geq 1 \rightarrow t \geq 1 \rightarrow t+1+t-1 = 2t = 2\sqrt{n-2} = a+b\sqrt{n+c}$$

$$\begin{aligned} a &= 0 \\ b &= 2 \\ c &= -2 \end{aligned}$$

$$\frac{a+b}{c} = \boxed{-\frac{1}{2}}$$

$$\frac{g}{f}$$

$$f(n) = \frac{n+2}{(n-3)(n-1)}$$

$$g(n) = \left\{ (1, 1), \underbrace{(1, 0)}_x, \underbrace{(1, 0)}_x, (0, 2) \right\}$$

$$f(n) \neq 0 \rightarrow n \neq -2, 3 \Rightarrow \text{این مقدار در مخرجی نیست}$$

$$\Rightarrow \left\{ \left( 2, \frac{1}{2} \right), (0, 4) \right\}$$

$$\text{الف) } \left\{ (2, 2), (9, -1), (1, 2), (-2, 4) \right\}$$

$$\text{ب) } \left\{ (1, 2), (9, -1), (14, 2), (1, 4) \right\}$$

$$\text{ج) } \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$$

$$\text{د) } \left\{ (1, -2), \left( 2, -\frac{1}{2} \right), \left( -1, \frac{1}{2} \right) \right\}$$