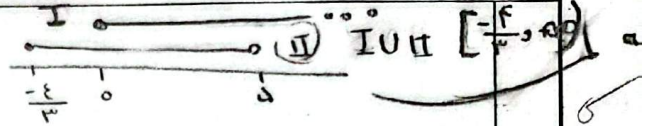


$$J = \sqrt{f(x) - x + 1}$$

I U II



$$f(x) = \begin{cases} 2x-1; [x] > 4 \Rightarrow \Delta, x = y = \sqrt{2x-1-x+1} = \sqrt{x} & x > 5 \\ 4x+3; [x] \leq 4 \Rightarrow x < 5 = y = \sqrt{4x+3-x+1} = \sqrt{3x+4} & x < 5 \end{cases}$$

$$y = \frac{24x^3 + 27x^2 + 18x + 3}{(4x^2 + 4x + 1)^2} = \frac{2(12x^3 + 13x^2 + 9x + 1)}{(4x^2 + 4x + 1)^2} = \frac{2(2x+1)^3}{(2x+1)^4} = \frac{2}{2x+1}$$

$$y = \frac{2}{2x+1} \Rightarrow x = R - \left\{ -\frac{1}{2} \right\}$$

$$\textcircled{1} f(x) = \frac{x^3 + 2x^2 - x - 2}{x^2 - 1} = \frac{x(x^2 - 1) + 2(x^2 - 1)}{x^2 - 1} = \frac{(x+2)(x^2 - 1)}{x^2 - 1} = x+2 \quad x \neq \pm 1$$

$$\textcircled{2} \frac{ax+2}{x+b} \xrightarrow{x=1} \frac{a+2}{1+b} = 3 \Rightarrow a+2 = 3+3b \Rightarrow -a+3b = -1$$

$$\xrightarrow{x=-1} \frac{-a+2}{-1+b} = 1 \Rightarrow -a+2 = -1+b \Rightarrow a+b = 3$$

$$\textcircled{3} \begin{cases} b = \frac{1}{3} \\ a = \frac{8}{3} \end{cases}$$

$$f(x) = \frac{x+1}{x-c} \rightarrow D_f = R - \{c\} \Rightarrow c = 1$$

$$g(x) = \frac{(x+1)(x-1)}{x^2 + ax + b} = \frac{(x+1)(x-1)}{(x-1)(x-1)} = \frac{x+1}{x-1}$$

$$x^2 - 2x + 1 \Rightarrow a = -2, b = 1 \quad D_g = R - \{1\}$$

$$f(x) = (x-2)^2(x-1)$$

$$f(x+1) = (x-2)^2(x) = x^3 - 4x^2 + 4x$$

$$f(1-x) = (-x-2)^2(-x) = -x^3 - 4x^2 - 4x$$

$$\frac{g(x)}{f(x)} = \frac{1}{-12x^2}$$

$$-1 - \frac{1}{(2x+1)^2} = 12x^2 + 1 + 4x(2x+1)$$

$$f(1-rx) \begin{cases} \sqrt[3]{x+r} & x \geq 0 \\ \varepsilon \sqrt{x} & x < 0 \end{cases}$$

$$f+1 = \Delta$$

$$f(r) = f(1-r(-1)) \Rightarrow \sqrt[3]{-1+r} = 1 \quad x=-1$$

$$f(-1) = f(1-r(1)) = \varepsilon \sqrt{-1} = \varepsilon \quad x=1$$

$$f(x+\sqrt{x}) = x^{\frac{r}{2}} + \sqrt{x}$$

$$x+\sqrt{x} = y \quad \begin{cases} x = y \\ x = -r \end{cases}$$

$$\rightarrow f(x+\sqrt{x}) = (x)^{\frac{r}{2}} + \sqrt{x} = 2y^{\frac{r}{2}}$$

$$f(x) = x^{\frac{r}{2}} + x \quad \left\{ \begin{array}{l} f(\frac{1}{x-1}) = T^{\frac{r}{2}} + T \\ f(\frac{-1}{1-x}) = -T^{\frac{r}{2}} - T \end{array} \right\} \oplus T^{\frac{r}{2}} + T - T^{\frac{r}{2}} - T = 0$$

$$f-g = \{(1, k)\} \Rightarrow r\sqrt{x} - f + k - 1 - \sqrt{x} - f + rk = 1$$

$$D_{f \cap g} = \{1\}$$

$$-rk + k - 1 = k \Rightarrow k = \frac{1}{r}$$

$$ra - \frac{b}{r} - k = f - r + \frac{1}{r} = \frac{\Delta}{r}$$

$$D_f \rightarrow \varepsilon x - ra \geq 0 \Rightarrow x \geq \frac{r}{\varepsilon} a$$

$$D_g \rightarrow b - fx \geq 0 \Rightarrow x \leq \frac{b}{f}$$

$$\Rightarrow \frac{r}{f} a = 1 \Rightarrow a = \frac{f}{r} \quad \left/ \quad \frac{b}{f} = 1 \Rightarrow b = r \right.$$

$$f(x) = \sqrt{m-x} + n \Rightarrow D_f = m-x \geq 0 \Rightarrow x \leq m$$

$$g(x) = \sqrt{rx+r} \rightarrow D_g = rx+r \geq 0 \Rightarrow x \geq -1$$

$$D_{f \cap g} = D_f \cap D_g$$

$$m = V \quad \leftarrow \quad = [-1, V]$$

$$f-g(r) = \sqrt{V-r} + n - r\sqrt{r} = 4\sqrt{r} \Rightarrow n = 4\sqrt{r} - \sqrt{V-r} \Rightarrow m+n = 4\sqrt{r} + \Delta$$

$$b^r + b^{-r} \\ (b+r)(b-r)$$