

$$f(n) = \left(\frac{1}{n}\right)^{n-2} - 1$$

$$y = \sqrt{x^3 f(n+1)}$$

$$x^3 f(n+1) \geq 0 \rightarrow (x^3) \left(\frac{1}{n+1}\right)^{n-1} - 1 \geq 0$$

$$\frac{1}{n-1} - 1 \geq 0 \rightarrow \frac{1}{n-1} \geq 1$$

$$D_f = [0, 1]$$

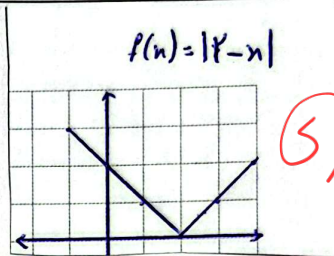
$$f(n) = \sqrt{n + |n+2|}$$

$$f(-n) = \sqrt{|2-n| - n}$$

$$|2-n| - n \geq 0$$

$$|2-n| \geq n \rightarrow |2-n| = n$$

$$D_f = (-\infty, 1]$$



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

$$\frac{n-1}{f(n)} \geq 0$$

$$x = -0.5, -0.5, 2, 3$$

$$D_f = (-0.5, 1] \cup (2, 3)$$

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$$Dy = Dy_v$$

$$y_1 = \frac{1}{9n^2 - 4n^2 - 8n - 3} = \frac{9n^2 - 4n^2 - n^2 - 8n - 8 + 1}{(9n^2 - 4n^2 + 1) - (n^2 + 8n + 8)} = \frac{(3n^2 - 1)^2}{(3n^2 - 1)^2 - (n+2)^2}$$

$$y_2 = \frac{1}{3n^2 + an + b}$$

$$(3n^2 - 1)^2 - (n+2)^2 = 0 \rightarrow 3n^2 + an + b = 0$$

$$3n^2 - n - 3 = 0$$

$$3n^2 - n - 3 = 3n^2 + an + b$$

$$a = -1, b = -3$$

$$\sqrt{-(a+b)} = \sqrt{-(-1)} = \sqrt{1} = 1$$

$$f(n) = n^3 + n$$

$$y = \sqrt{f(n) - f\left(\frac{\varepsilon}{n}\right)} = \sqrt{n^3 + n - \frac{9\varepsilon}{n^3} - \frac{\varepsilon}{n}} = n^3 + n - \frac{9\varepsilon}{n^3} - \frac{\varepsilon}{n} \geq 0 \rightarrow \frac{n^4 + n^2 - 9\varepsilon n^2 - 4\varepsilon}{n^3}$$

$$t = n^2 \rightarrow t^2 + t^2 - 4\varepsilon = (t - \varepsilon)(t^2 + 2t + 14)$$

$$\frac{t^2 - \varepsilon}{n^3} \geq 0 \rightarrow \frac{-1 + 1 - 1 + 1}{n^3}$$

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

$$f(x^r + x) = 2x^r - 1, f(2) + f(10) = ?$$

$$x=1 \rightarrow f(2) = 2 - 1 = 1$$

$$x=2 \rightarrow f(10) = 8 - 1 = 7$$

$$f(2) + f(10) = 1 + 7 = 8$$

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$$f(n) = n^3 - 4n^2 + 12n = (n-2)^3 + 8$$

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

$$\frac{g(\sqrt{2} - 3)}{f(\sqrt{2} + 2)} = \frac{(\sqrt{2})^3 - 27}{(\sqrt{2})^3 + 8} = \frac{2 - 27}{2 + 8} = \frac{-25}{10} = -2.5$$

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$$f(n) = \sqrt{n+2}\sqrt{n-2}, g(n) = \sqrt{n-2}\sqrt{n-2}, n \geq 2 \rightarrow f(n) + g(n) = a + b\sqrt{n+c}, \frac{a+b}{c} = ?$$

$$\sqrt{n-2}\sqrt{n-2} + \sqrt{n+2}\sqrt{n-2} = \sqrt{(n-2)+2-2}\sqrt{n-2} + \sqrt{(n-2)+2+2}\sqrt{n-2} =$$

$$\sqrt{(n-2)-2}\sqrt{n-2} + \sqrt{(n-2)+2}\sqrt{n-2} = |\sqrt{n-2}-2| + |\sqrt{n-2}+2| = \sqrt{n-2} - 2 + \sqrt{n-2} + 2 = 2\sqrt{n-2}$$

$$a=0, b=2, c=-2 \quad \frac{a+b}{c} = \frac{2}{-2} = -1$$

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$$f(n) = \frac{n+2}{n^2-2n+3}, g(n) = \{(2,1), (1,0), (3,0), (0,2)\}, \frac{g}{f} = ?$$

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$$\frac{g}{f} = \left\{ \left(0, \frac{2}{3}\right), \left(2, \frac{1}{3}\right), \left(1, \frac{0}{3}\right), \left(3, \frac{0}{3}\right) \right\} \cup \left\{ (0, 2), \left(2, -\frac{1}{2}\right) \right\}$$

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$$الف) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 2\right) \right\}$$

$$ب) = \{(1, 2), (-1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2)\}$$

$$ج) = \{(-2, 19), (1, 3), (3, 9), (-1, 1)\}$$

$$د) = \{(1, -2), (3, -1)\}$$

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