

A: $\lim_{x \rightarrow 0} f(x)$

B: $\lim_{x \rightarrow 0} f(x)$

C: $\lim_{x \rightarrow 0} f(x)$

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

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

$$D_f = (-\infty, 0] \cup [1, +\infty)$$

$$f(x) = \sqrt{x+1} \sqrt{x+2}$$

$$f(-x) = ?$$

$$\Rightarrow f(-x) = \sqrt{-x+1} \sqrt{-x+2}$$

$$-x+1 \geq 0$$

$$| -x+2 | \geq x \Rightarrow \begin{cases} -x+2 \geq x \\ -x+2 \leq -x \end{cases} \Rightarrow \begin{cases} x \leq 1 \\ x \geq 2 \end{cases}$$

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

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

اعداد 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

$$D_f = (-\infty, 1) \cup (2, +\infty)$$

$$y = \sqrt{f(x) - f\left(\frac{x}{2}\right)}$$

$$\Rightarrow \sqrt{x^r + x + \frac{14}{x^r}} - \frac{x}{2}$$

$$\Rightarrow y = \sqrt{\left(x^r - \frac{x}{2} \right) \left(x^r + \frac{14}{x^r} \right) + \left(x - \frac{x}{2} \right)}$$

$$y = \sqrt{\left(x - \frac{x}{2} \right) \left(x^r + \frac{14}{x^r} \right) + \left(x - \frac{x}{2} \right)} = \sqrt{\left(x - \frac{x}{2} \right) \left(x^r + \frac{14}{x^r} + 1 \right)}$$

$$y = \sqrt{\left(\frac{x^r - x}{2} \right) \left(\frac{x^r + 14x^r + 14}{x^r} \right)} = \sqrt{\frac{(x^r - x)(x^r + 14x^r + 14)}{2x^r}}$$

$$\frac{x^r - x}{2x^r} = \frac{(x^r + 14x^r + 14)(1 + 14x^r)}{2x^r} \quad \text{Calc. 2-2}$$

$$\frac{(x^r - x)(x^r + 14x^r + 14)}{2x^r} = \frac{1}{x^r + 14x^r + 14} \Rightarrow a = b = 1 \Rightarrow \sqrt{1 + 14 + 14}$$

$$a = 1 \quad b = -1 \rightarrow \sqrt{1 - 1} \checkmark$$

$$f(r) + f(1) = 9$$

$$f(m^r + m) = r m^r - 1$$

$$\left. \begin{array}{l} m^r + m = r \Rightarrow m = 1 \xrightarrow{R01} r m^r - 1 \Rightarrow 1 \\ m^r + m = 1 \Rightarrow m = r \xrightarrow{R02} r m^r - 1 \Rightarrow r \end{array} \right\} \xrightarrow{*} \boxed{V+1 = \Lambda}$$

$$g(x) = g(\sqrt{v-r}) \Rightarrow \begin{array}{l} V - 9\sqrt{v-r} + 12\sqrt{v-r} - 2V + 9(\sqrt{v-r} - 4\sqrt{v-r} + 9) + 2V\sqrt{v-r} - \Lambda \\ \downarrow x^r + 9m^r + rvm \quad \rightarrow V - 9\sqrt{v-r} + 12\sqrt{v-r} - 2V + 9\sqrt{v-r} - 36\sqrt{v-r} + 81 + 2V\sqrt{v-r} - \Lambda \end{array}$$

$$f(x) = f(\sqrt{r-r}) \Rightarrow r + 9\sqrt{r-r} + 12\sqrt{r-r} + \Lambda - 9(\sqrt{r-r} + 2\sqrt{r-r} + 2) + 12\sqrt{r-r} + 2\sqrt{r-r}$$

$$\frac{g(\sqrt{v-r})}{f(\sqrt{r-r})} = \frac{-r}{1} = \boxed{-1}$$

$$f(m) = \sqrt{m-2+2\sqrt{m-2}+2} = (\sqrt{m-2}+1)^2$$

$$g(x) = \sqrt{x-2+2\sqrt{x-2}+2} = (\sqrt{x-2}+1)^2$$

$$f(m) + g(m) = (\sqrt{m-2}+1)^2 + (\sqrt{m-2}-1)^2 = 2\sqrt{m-2} \Rightarrow a+b=2$$

$$x = \begin{array}{l} r \Rightarrow \frac{x}{r} = -2 \Rightarrow (r, -2) \\ r \Rightarrow \frac{x}{r} = 0 \Rightarrow (r, 0) \\ r \Rightarrow \frac{x}{r} = 1 \Rightarrow (r, 1) \\ 0 \Rightarrow \frac{x}{r} = 2 \Rightarrow (0, 2) \end{array}$$

$$\frac{g}{p} = \frac{x}{r} = \boxed{9}$$

$$\frac{g}{p} = \frac{1}{-2} = \boxed{-\frac{1}{2}}$$

$$f(x) = \left\{ \left(0, \frac{r}{r}\right), (r, -2) \right\}$$

$$g(x) = \left\{ (r, 1), (1, 0), (r, 0), (0, 2) \right\}$$

$$g(x) = 1, -1, r$$

$$a) f(r) = \left\{ \left(\frac{1}{r}, r\right), \left(\frac{r}{r}, -1\right), (r, r), \left(-\frac{1}{r}, r\right) \right\}$$

$$b) f(r) = \left\{ (1, r), (\sqrt{r}, -1), (r, r) \right\}$$

$$2.) f(r) = \left\{ (-r, 1), (1, r), (r, r), (-1, 1) \right\}$$

$$c) f(r) = \left\{ (r, -1), (1, -2) \right\}$$