

نام و نام خانوادگی: محمد سید شمس الدین
پاسخنامه تشریحی تکلیف شماره ۵ لایس یازدهم پسر A

$$f(x) = \sqrt{\frac{x-1}{x}} = \frac{x-1}{x} = \frac{(x-1)^2 - x}{x(x-1)} = \frac{-(x-1)}{x(x-1)} \rightarrow \frac{1}{x} \quad (\text{الف})$$

$$= \frac{n-5n-5}{(n+1)n} = \frac{-n-5}{n(n+1)} \rightarrow -\frac{1}{n}$$

$$D_f = R - \left\{ 0, -1, -\frac{1}{n}, -5, 1 \right\}$$

$$\begin{aligned} (r^{-\lambda} - 9)(r^r - r^2) &\Rightarrow r^{-\lambda} - 9 = 0 \Rightarrow r^{-\lambda} = 9 \Rightarrow r^{\lambda} = \frac{1}{9} \Rightarrow \lambda = -2 \quad (1) \\ r^r - r^2 &= 0 \Rightarrow r^2 = r^r \Rightarrow 2 = \log_r r^r = \frac{r}{r} \\ (r^r)^0 &= r^r \end{aligned}$$

$$P_f = [1, 15]$$

$$f(x) = \log_x (x^5 - x - 5)$$

$$\frac{-1}{x+5} - \frac{5}{x+5} \quad (-\infty, -1) \cup (5, +\infty)$$

$$x^5 - 1 = (x-1)(x+1) \Rightarrow (x+1)(x-1) = 0$$

$$\frac{-1}{x+5} - \frac{1}{x+5} \quad (-\infty, -1] \cup [1, +\infty)$$

$$((-\infty, -1] \cup [1, +\infty)) \cap ((-\infty, -1) \cup (5, +\infty)) = ((-\infty, -1) \cup (5, +\infty))$$

$$f(x) = \sqrt{x+9} - x^2$$

$$D_f = [-2, b]$$

$$f(-2) = \sqrt{-2+9} - (-2)^2 = \sqrt{7} - 4 = -1$$

$$\Rightarrow a = -1 \Rightarrow f(x) = \sqrt{x+9} - x^2$$

$$\Delta = b^2 - 4ac = (-1)^2 - (1 \times 4) = 1 - 4 = -3$$

$$\frac{1}{4} + 12 = \frac{49}{4} \Rightarrow \frac{1}{4} \pm \sqrt{\frac{49}{4}} = \frac{1}{4} \pm \frac{7}{2}$$

$$b = \frac{\frac{1}{4} - \frac{7}{2}}{-2} = \frac{-\frac{13}{4}}{-2} = \frac{13}{8} = 1.625$$

$$a+b = -1 + 1.625 = 0.625$$

$$n \geq 1 \rightarrow f(n) - 2 = f(n-1) - 2 = f(n-2)$$

$$n < 1 \Rightarrow f(n) - 3 = r_{n+1} - n = n + r$$

$$[1, +\infty) \cup [-5, 1) = [-5, +\infty)$$

$$\sin \frac{\pi}{4} = \sin \varphi_1 = \frac{\sqrt{2}}{2} \quad f\left(\frac{\sqrt{2}}{2} + 1\right) = 2\left(\frac{\sqrt{2}}{2} + 1\right)\left(\frac{\sqrt{2}}{2} + 1 - 2\right) = 2\left(\frac{\sqrt{2}}{2} + 1\right)\left(\frac{\sqrt{2}}{2} - 1\right)$$

$$\cos \frac{\pi}{4} = \cos \varphi_1 = 1 \quad \Rightarrow f\left(\frac{\sqrt{2}}{2} + 1\right) = 2\left(\frac{\sqrt{2}}{2} - 1\right) = 2\left(-\frac{1}{2}\right) = \boxed{-1}$$

$$f\left(\frac{\sqrt{2}}{2} + 1\right) = ?$$

$$f(x) = 2x^2 - 4x \Rightarrow f(x) = 2(x^2 - 2x) \Rightarrow f(x) = 2(x - 2)x = 2x(x - 2)$$

$$f(f(a)) = a \Rightarrow f(a) = \frac{a+1}{a-1}$$

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a \Rightarrow \frac{a+1+a-1}{a+1-a+1} = \frac{2a}{2} = a \Rightarrow a = a$$

$$a \in \mathbb{R} - \{1\}$$

دایره ی هکدری همان عدد را به ما می دهد
چون 1 که خارج را تقسیم نموده می کند

$$f(x) = x^2 - 4x \quad g(x) = \sqrt{x^2 - 1} \quad f(g(a)) = -4$$

$$f(x) = -4 \Rightarrow x^2 - 4x = -4 \Rightarrow x^2 - 4x + 4 = 0 \Rightarrow (x - 2)^2 = 0 \Rightarrow x = 2$$

$$g(a) = 2 \Rightarrow \sqrt{a^2 - 1} = 2 \Rightarrow a^2 - 1 = 4 \Rightarrow a^2 = 5 \Rightarrow \boxed{a = \pm \sqrt{5}}$$

$$f(x+c) = x^2 - ax + b$$

$$x+c = 4 \quad f(1+c) = 1^2 - a + b = 2 = f(4)$$

$$x+c = -2 \quad f(-2+c) = (-2)^2 - a + b = 7 = f(-2)$$

$$f(4) \times f(-2) = 2 \times 7 = 14 \Rightarrow \boxed{14}$$

$$f(\cos^2 \alpha + 4 \cos \alpha) = \tan^2 \alpha$$

$$\cos^2 \alpha + 4 \cos \alpha = 5, 0 = \frac{5}{2}$$



$$\alpha = \frac{\pi}{2} \dots \frac{3\pi}{2}$$

$$\tan \frac{\pi}{2} = -\sqrt{3}, \tan \frac{3\pi}{2} = \sqrt{3}$$

$$(\sqrt{3})^2 = 3, (\sqrt{3})^2 = 3$$

$$1 \cos^2 \alpha + 1 \cos \alpha = 5 \Rightarrow 1 \cos^2 \alpha + 1 \cos \alpha - 5 = 0$$

$$\Rightarrow \cos^2 \alpha + 1 \cos \alpha - 5 = 0$$

$$\Rightarrow (\cos \alpha - 2)(\cos \alpha + 5) = 0$$

زیرا $\cos \alpha$ کوچک تر از اینست $\rightarrow -\frac{1}{2} \times \frac{1}{2} \checkmark$