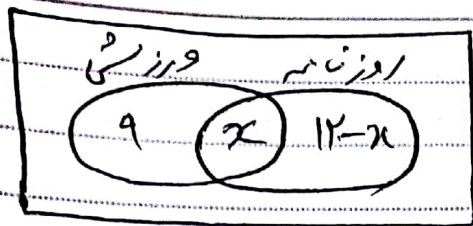


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$$9 + x = 14 \rightarrow x = 5$$

$$9 + 5 + 5 = 19$$

$$39 - 19 = 18$$

۴ (۱.۱)

$$A = \sqrt[2]{\sqrt[3]{4 \times 4^2}} \times 2^{\frac{4}{3}} = \sqrt[2]{4^5} \times 2^{\frac{4}{3}} = 2^{\frac{5}{2}} \times 2^{\frac{4}{3}} = 2^{\frac{17}{6}}$$

$$= 2^{\frac{17}{6}} = 4 \rightarrow (2A)^{-\frac{1}{3}} = (8)^{-\frac{1}{3}} = \frac{1}{2} = \frac{1}{2}$$

$$(۱.۳) \text{ ایراد دارد } m = \frac{1}{p} \text{ از جواب حذف می شود}$$

$$f(x) = -x^2 + 2x + 5 = -(x-1)^2 + 4 \quad ۱ (۱.۴)$$

$$\xrightarrow{\text{۳ واحد به راست}} -(x-4)^2 + 4 \xrightarrow{\text{۲ واحد به چپ}} -(x-2)^2 + 8$$

$$-(x-2)^2 + 8 > x \rightarrow x^2 - 7x + 12 < 0 \rightarrow 3 < x < 4$$

$$14, 21, \dots, 98 \quad ۲ (۱.۵)$$

$$\text{مقدار} = \frac{98 - 14}{5} + 1 = 13 \rightarrow S_{13} = \frac{13}{2} (14 + 98) = 728$$

$$\frac{1}{x-9} + \frac{1}{x} = \frac{1}{2} \rightarrow x = 18 \quad ۴ (۱.۶)$$

$$x - 9 = 18 - 9 = 9$$

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$$f^{-1} = \{(1, 1), (2, 2), (3, 3), (4, 4)\} \quad 1 (1.5)$$

$$g \circ f^{-1} = \{(2, 3), (3, 1), (4, 2)\}$$

$$\frac{g}{g \circ f^{-1}} = \{(3, 2), (2, 2)\} \quad \text{مهندس یاسین سپهر}$$

$$y = x^2 - x \rightarrow x=1 \rightarrow y=0 \quad 1 (1.5)$$

$$x=2 \rightarrow y=2$$

$$f(x) = -2 + \left(\frac{1}{x}\right)^{Ax+B} \rightarrow f(1) = 0, f(2) = 2$$

$$A = -1, B = 0, f(3) = -2 + \left(\frac{1}{3}\right)^{-1} = -2 + 1 = -1$$

$$\tan \frac{11\pi}{6} = -1, \sin \frac{20\pi}{6} = -\frac{\sqrt{3}}{2} \quad 2 (1.5)$$

$$\cos\left(\frac{13\pi}{6}\right) = -\frac{\sqrt{3}}{2} \rightarrow -1 + \left(-\frac{\sqrt{3}}{2}\right)\left(-\frac{\sqrt{3}}{2}\right) = -\frac{1}{2}$$

$$\lim_{x \rightarrow a} \frac{\sin a(1) + \cos a \sin x - \sin a}{x} \quad 3 (1.5)$$

$$\frac{\sin x \sim x}{x} = \cos a$$

$$\text{HOP} \rightarrow \frac{x}{1 - \frac{1}{\sqrt{x+2}}} \quad x=2 \quad \epsilon$$

$$2a-1 = \epsilon \rightarrow a = 2, \delta$$

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$$y = 1 + \frac{a}{r} \sin^2 b x \quad \text{مشتق } b, a \text{ } (112)$$

$$\frac{2\pi}{|2b|} = \pi \xrightarrow{b>} 1=b, \quad \underbrace{1 + \frac{a}{r}}_{\text{max}} = \frac{r}{r} \rightarrow a=1$$

$$(\sin x + \cos x)(\sin^2 x - \sin x + \cos^2 x) \quad (113)$$

$$= 1 - \sin x \cos x \Rightarrow \sin x + \cos x = 1 \Rightarrow x = 0, 2\pi, \frac{\pi}{2}$$

$$1 - \sin x \cos x = 0 \rightarrow \sin^2 x = 2 \quad \text{مستحيل}$$

$$\text{مجموع جواب : } 0 + 2\pi + \frac{\pi}{2} = \frac{5\pi}{2} \quad \boxed{\text{مهندس ياسين سپهر}}$$

$$\frac{9}{x-2} \text{ مضروب خارج } x=2 \quad (114)$$

$$x^2 - 4x + 4 \rightarrow a=4, b=4, \quad (x-2)^2$$

$$a+b=0$$

$$(f \circ g)'(1) = g'(1) f'(g(1)) = \frac{3}{r} \times \frac{r}{3} = 1 \quad (115)$$

$$g'(x) = 1 + \frac{1}{2\sqrt{x}} \rightarrow g'(1) = \frac{3}{r}, \quad g(1) = 2$$

$$\text{مشتق : } 2 + 2a + b = 0 \rightarrow 2a + b = -2 \quad (116)$$

$$\text{مشتق : } x + a = -2(2) + 2 \rightarrow 2 + a = -2 \rightarrow a = -4$$

$$b = 4 \rightarrow a + b = 0$$

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$$\text{مسئله ۱۴ : } \frac{4x^3 - 2}{x^2} = 5 \quad ۱۴ (۱۱۷)$$

$$\text{حله : } f'(x) = \sqrt{4x+1} + \frac{2(x+2)}{\sqrt{4x+1}} \quad x = \frac{3}{2} \quad 2 + \frac{11}{2}$$

$$5 - 2 - \frac{11}{2} = \frac{1}{2} = 0.5$$

$$y'(0) = 0 \Rightarrow y' = 12x^3 + 3ax^2 + 2bx + c \quad 1 (۱۱۸)$$

$$\Rightarrow y'(0) = 0 \Rightarrow c = 0, \quad y'(1) = 0$$

$$12 + 3a + 2b = 0, \quad y''(1) = 0 \Rightarrow 36 + 4a + 2b = 0$$

$$\Rightarrow b = 4, \quad a = -8$$

$$\text{مسئله ۱۵ : } x = 1 \quad ۱۵ (۱۱۹)$$

$$y' = \frac{(x-1)(2x^2 - 2 - 2x^2 - 2x)}{(x-1)^2} = 0 \Rightarrow \begin{cases} x = 1 \\ x = -\frac{1}{2} \end{cases}$$

$$\text{برای } x = 1 \text{ و } x = -\frac{1}{2} \text{ محاسبه می شود}$$

$$2x - 1 > x + 1 \Rightarrow x > 2 \quad 1 (۱۲۰)$$

$$x + 1 < 3 \Rightarrow x < 2 \quad \cap \rightarrow \emptyset$$