

بارم

محل علم و دانش، باغ بهشت است امام علی (ع)

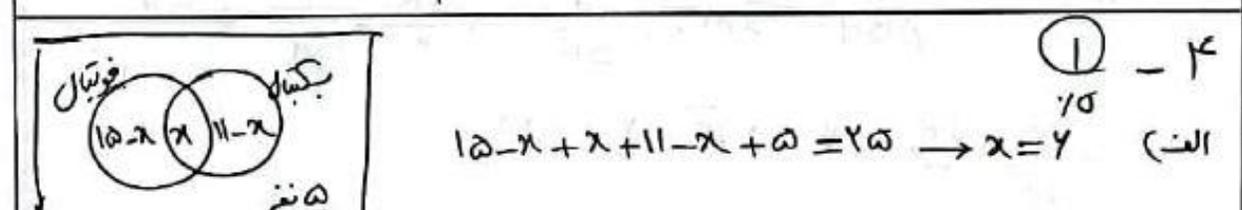
ردیف

۱- الف) درست
ب) نادرست
ج) درست
د) درست

۲- الف) $\Delta = 0$
ب) ۷ و -۱
ج) ۱ و ۲
د) $\cot 52^\circ$

شماره علم	۱	۲	۳	...	n
تعداد اصل و لغت	۳	۶	۱۰		
	۱+۲	۱+۲+۳	۱+۲+۳+۴		
					$1+2+3+\dots+(n+1) = \frac{(n+1)(n+2)}{2}$

$n=11 \rightarrow a_{11} = \frac{(11+2)(11+1)}{2} = 78$



۳- الف) $15-x+x+11-x+5=25 \rightarrow x=4$
ب) $15-4=9$
ج) $F \text{ قطع} + B \text{ قطع} + \text{مجموع} = 9+5+5=19$
 $11-4=5$

۴- الف) $a_5 - a_4 = 48$
ب) $a_1 \cdot r^4 - a_1 \cdot r^3 = a_1 \cdot r^3 (r-1) = 48$ $r=2 \rightarrow a_1 \cdot 2^3 (2-1) = 48 \rightarrow a_1 = 6$
ج) $a_n = a_1 \cdot r^{n-1} = 6 \times 2^{n-1}$
د) $a_{10} = 6 \times 2^9 = 2^2 \times 2^9 = 2^{11}$

$$t_1 + t_1 + t_1 = 3 \rightarrow 3t_1 + 3d = 3 \rightarrow t_1 + d = 1 \quad (1) - 9$$

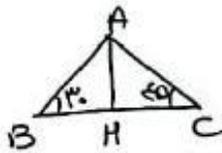
$$t_1 + t_1 + t_1 = 3 \rightarrow t_1 + 3d + t_1 + 3d + t_1 + 3d = 3 \cdot 9$$

$$3t_1 + 9d = 27 \rightarrow t_1 + 3d = 9 \quad (2)$$

$$\begin{cases} t_1 + d = 1 \\ t_1 + 3d = 9 \end{cases} \rightarrow 3d = 8 \rightarrow d = \frac{8}{3}, t_1 = -\frac{5}{3}$$

$$t_n = t_1 + (n-1)d = -\frac{5}{3} + (n-1) \cdot \frac{8}{3} = \frac{8n-13}{3}$$

$$\frac{8n-13}{3} = 9 \rightarrow 8n = 30 \rightarrow n = \frac{15}{4}$$

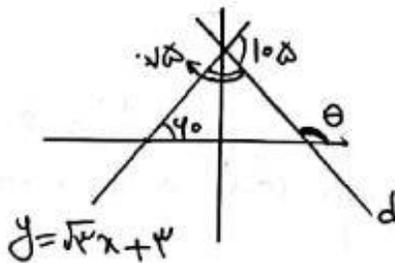


$$\Delta AHC: \hat{C} = 45^\circ \rightarrow AH = HC = 1 \quad (1) - 11$$

$$\Delta ABH: \tan 45^\circ = \frac{AH}{BH} \rightarrow \frac{1}{1} = \frac{1}{BH} \rightarrow BH = 1$$

$$BC = \frac{1}{1} \times \frac{1}{1} + 1 = 1 + 1 = 2$$

$$S_{\Delta ABC} = \frac{1}{2} AH \cdot BC = \frac{1}{2} \times 1 \times 2 = 1$$



$$y = \sqrt{3}x + 3$$

$$\rightarrow \tan 60^\circ$$

$$\theta = 60^\circ + 30^\circ = 90^\circ$$

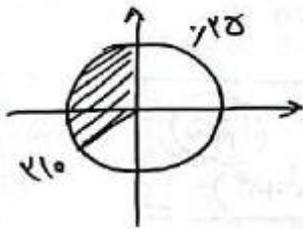
$$\tan 90^\circ = -\tan 0^\circ = -1$$

$$y = -x + 3$$

$$\rightarrow \tan 135^\circ$$

$$\cos^2 \theta = 1 - \sin^2 \theta = 1 - \left(\frac{y}{r}\right)^2 = \frac{a}{r} \rightarrow \cos \theta = \pm \frac{\sqrt{a}}{r} \quad \text{① - 9}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\frac{y}{r}}{\frac{-\sqrt{a}}{r}} = \frac{-y}{\sqrt{a}} = \frac{-\sqrt{a}}{a} \quad \cot \theta = \frac{-\sqrt{a}}{y}$$



$$-1 \leq \cos \theta \leq 0 \quad > 0$$

① - 10

$$-1 \leq \cos \theta \leq 0 \xrightarrow{+r} r \leq r \cos \theta \leq 0 \xrightarrow{\div r} \frac{r}{r} \leq \cos \theta \leq 0$$

$$\sin^2 \theta - \cos^2 \theta = 1 - 2 \cos^2 \theta \quad \text{① - 11}$$

$$\begin{aligned} \sin^2 \theta - \cos^2 \theta &= (\sin^2 \theta - \cos^2 \theta)(\sin^2 \theta + \cos^2 \theta) = \\ &= (1 - \cos^2 \theta - \cos^2 \theta) = 1 - 2 \cos^2 \theta \end{aligned}$$

$$d = \frac{a}{r} \text{ من } \frac{a}{r}$$

$$a = \frac{a}{r} \text{ من } \frac{a}{r}$$

① - 12

$$b = \frac{a}{r} \text{ من } \frac{a}{r}$$

$$c = \frac{a}{r} \text{ من } \frac{a}{r}$$

$$\text{لذا } \sqrt{14} \times 2^{\frac{-5}{r}} \times \sqrt{2} \times 2^{-3} = 2^{\frac{r}{2}} \times 2^{\frac{-5}{r}} \times 2^{\frac{1}{r}} \times 2^{-3} = \quad \text{① - 13}$$

$$= 2^{\frac{r}{2} + \frac{-5}{r} + \frac{1}{r} + (-3)} = 2^{\frac{r^2 - 10 + 2 - 6r}{2r}} = 2^{\frac{-13r}{2r}}$$

$$\therefore \sqrt{y - 4\sqrt{y}} = \sqrt{(y - \sqrt{y})^2} = y - \sqrt{y}$$

$$ا) \frac{f}{\sqrt[3]{f\alpha} + \sqrt[3]{\alpha} + 1} \times \frac{\sqrt[3]{f\alpha} - 1}{\sqrt[3]{f\alpha} - 1} = \frac{f(\sqrt[3]{f\alpha} - 1)}{(\sqrt[3]{f\alpha})^3 - 1^3} = \frac{f(\sqrt[3]{f\alpha} - 1)}{f\alpha - 1} \quad (1, \sqrt[3]{\alpha}) - 1f$$

$$= \frac{f(\sqrt[3]{f\alpha} - 1)}{f} = \sqrt[3]{f\alpha} - 1 \quad \times \delta$$

$$ب) \frac{1}{\sqrt[3]{2^3} \sqrt[3]{3^3} \sqrt[3]{4^3}} = \frac{1}{\sqrt[12]{2^3 \times 3^3 \times 4^3}} = \frac{1}{\sqrt[12]{2^3 \times 3^3 \times 2^6}} = \frac{1}{\sqrt[12]{2^9 \times 3^3}} = \frac{1}{2 \times 3} = \frac{1}{6} \quad \times \delta$$

$$\frac{x^5 - x^3 - 12x}{12x^2 + 12x} = \frac{x(x^4 - x^2 - 12)}{12x(x+1)} = \frac{x(x^2 - 4)(x^2 + 3)}{12x(x+1)} = \frac{x(x-2)(x+2)(x^2+3)}{12x(x+1)} = \frac{(x-2)(x+2)(x^2+3)}{12(x+1)} \quad (1, \sqrt[3]{\alpha}) - 1\alpha$$

$$ا) A = \sqrt{x^2 - 3x - 4} = 0 \quad (1, \sqrt[3]{\alpha}) - 1\alpha$$

$$\sqrt{A} = (\sqrt{x})^2 - 3(\sqrt{x}) - 4 = 0 \quad \times \delta$$

$$\sqrt{A} = (\sqrt{x} - 4)(\sqrt{x} + 1) = 0 \quad \times \delta$$

$$\sqrt{A} = \sqrt{x-1}(\sqrt{x} + 4) = 0 \quad \times \delta$$

$$x=1 \leftarrow \quad \rightarrow x = \frac{-4}{1} = -4 \quad \times \delta$$

$$ب) 3x^2 - 4x + 1 = 0$$

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

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-(-4) \pm \sqrt{4}}{2 \times 3} = \frac{4 \pm 2}{6} \quad \begin{cases} x = \frac{4}{6} = \frac{2}{3} \\ x = \frac{4-2}{6} = \frac{1}{3} \end{cases} \quad \times \delta$$

$$y = x^2 - 2x - 2$$

$$(1, -1) - IV$$

$$x_s = \frac{-b}{2a} = \frac{-(-2)}{2 \times 1} = 1$$

$$y_s = 1 - 2 - 2 = -3$$

برخوردگرها

$$x^2 - 2x - 2 = 0$$
$$y = 0$$

$$\Delta = 12$$

$$x = \frac{2 \pm \sqrt{12}}{2} = 1 \pm \sqrt{3}$$

S:

x	y
0	-2
1	-3
2	-2

