

Date:

تاریخ: 27

Sat. Sun. Mon. Tue. Thu. Wed. Fri.

Subject:

کتاب حاتی - دهم دختر B

سوال 1:

از این دو رقم یان مساوی است!

$$(11 + 13 + 15 + 17 + \dots) (21 + 23 + \dots) = 4 \times 7 = 28$$

لر رقم یان: 2

$$(1 \times 3) + (1 \times 2 \times 4) = 3 + 8 = 11$$

سوال 2:

الف)

$$\sqrt[4]{\frac{1}{\epsilon + \sqrt{V}}} \times \sqrt[4]{(1 + \sqrt{V})^2} = \sqrt[4]{\frac{1}{\epsilon + \sqrt{V}}} \times (1 + \sqrt{V})^{\frac{1}{2}} = \sqrt[4]{\frac{1 + V + 2\sqrt{V}}{\epsilon + \sqrt{V}}}$$

$$= \sqrt[4]{\frac{\epsilon + 2\sqrt{V}}{\epsilon + \sqrt{V}}} \Rightarrow \sqrt[4]{\frac{2(\epsilon + \sqrt{V})}{\epsilon + \sqrt{V}}} = \sqrt[4]{2}$$

ب)

$$\frac{\sqrt{2} + \sqrt{5}}{\sqrt{10} + 2} = \frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}\sqrt{5} + (\sqrt{2})^2} = \frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}(\sqrt{5} + \sqrt{2})} = \frac{1}{\sqrt{2}}$$

$$\sqrt{3} - \sqrt{5} - \sqrt{3 + \sqrt{5}} \xrightarrow{\text{مربع}} 4 - 2\sqrt{5} = 4 - \epsilon = 2$$

$$\frac{1}{\sqrt{2}} \times 2 = \frac{2}{\sqrt{2}} = \sqrt{2}$$

سوال 3:

الف)

$$\frac{\sqrt{1} + \sqrt{27}}{5 - \sqrt{4}} = \frac{(1\sqrt{27} + 3\sqrt{3})(5 + \sqrt{4})}{(5 - \sqrt{4})(5 + \sqrt{4})} = \frac{10\sqrt{27} + 2\sqrt{27} + 5\sqrt{3} + 3\sqrt{18}}{19}$$

$$\frac{10\sqrt{27} + 2\sqrt{27} + 5\sqrt{3} + 9\sqrt{3}}{19} = \frac{12\sqrt{27} + 14\sqrt{3}}{19} = \frac{12(\sqrt{27} + \sqrt{3})}{19} = \sqrt{27} + \sqrt{3}$$

$$2(\sqrt[4]{9} - 1)^{-1} = 2(\sqrt{3} - 1)^{-1} = \frac{2}{\sqrt{3} - 1} = \frac{2(\sqrt{3} + 1)}{3 - 1} = \sqrt{3} + 1$$

Date: / /

Sat	Sun	Mon	Tue	Thu	Wed	Fri
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Subject: / /

$$ب) \frac{\sqrt{27}-1}{\varepsilon+\sqrt{3}} = \frac{3\sqrt{3}-1}{\varepsilon+\sqrt{3}} \times \frac{\varepsilon-\sqrt{3}}{\varepsilon-\sqrt{3}} = \frac{12\sqrt{3}-9-\varepsilon+\sqrt{3}}{13} = \frac{13\sqrt{3}-13}{13}$$

$$\frac{13(\sqrt{3}-1)}{13} = \sqrt{3}-1 \quad \checkmark$$

سوال ٢:

$$*! \quad الف) \left(\frac{\sqrt{1+\sqrt{3}} + (\sqrt{\sqrt{3}-1}-2)}{\sqrt{\sqrt{3}-\sqrt{2}}} \right)^2 = \frac{1+\sqrt{3}+\sqrt{3}-1+\varepsilon}{\sqrt{3}-\sqrt{2}} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} \quad (1.10)$$

$$\frac{2\sqrt{3}+\varepsilon(\sqrt{3}+\sqrt{2})}{\sqrt{3}-\sqrt{2}} = \frac{2(\sqrt{3}+2)(\sqrt{3}+\sqrt{2})}{\sqrt{3}-\sqrt{2}} = \frac{2(3+\sqrt{3}(\sqrt{2}+2)+2\sqrt{2})}{\sqrt{3}-\sqrt{2}}$$

$$\Rightarrow 4+2\sqrt{6}+\varepsilon\sqrt{3}+\varepsilon\sqrt{2} \quad \checkmark$$

$$ب) \sqrt[12]{2^4} \times \sqrt[12]{144} \times \sqrt[12]{4^4 \times 2} = \sqrt[12]{2^4} \times \sqrt[12]{2^4 \times 3^2} \times \sqrt[12]{2^4 \times 2} = \sqrt[12]{2^4 \times 2^4 \times 3^2 \times 2^4 \times 2} = \sqrt[12]{2^{16} \times 3^2}$$

$$\Rightarrow \sqrt[12]{2^{16} \times 3^2} = \sqrt[12]{2^{12} \times 2^4 \times 3^2} = \sqrt[12]{2^{12} \times 16 \times 9} = \sqrt[12]{2^{12} \times 144} = \sqrt[12]{2^{12} \times 12^2} = 12 \quad \checkmark$$

$$\frac{w^x(1+w+9+27+11+2\varepsilon w)}{r^x(2^{-2}+2^{-1}+1+2+2^2+2^3)} \Rightarrow \frac{w^x(14\varepsilon)}{r^x(\frac{4w}{\varepsilon})} = w^2$$

سوال ٣:

$$\frac{w^x}{r^x} \times \frac{14\varepsilon}{\frac{4w}{\varepsilon}} = w^2 \rightarrow \frac{w^x}{r^x} = \frac{1}{14\varepsilon} \times \frac{4w}{\varepsilon} \Rightarrow \frac{w^x}{r^x} = \frac{4w}{14\varepsilon} = \frac{2w}{7\varepsilon}$$

$$\Rightarrow x = 2 \quad \checkmark$$

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Date: / /

Sat	Sun	Mon	Tue	Thu	Wed	Fri
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Subject: _____

$$(a^p + b^p - 2ab)^p (a^p + b^p + 2ab)^p = (a-b)^p (a+b)^p \quad \text{سوال ٩}$$

$$\Rightarrow ([(a-b)(a+b)]^p)^p = [(a^p - b^p)^p]^p \Rightarrow^* (a^{\varepsilon} - 2a^p b^p + b^{\varepsilon})^p$$

$$a^{\varepsilon} = (\sqrt[p]{\sqrt{4}-2})^{\varepsilon} = \sqrt{4}-2$$

$$b^{\varepsilon} = (\sqrt[p]{\sqrt{4}+2})^{\varepsilon} = \sqrt{4}+2$$

$$a^p b^p = (\sqrt{4}-2)(\sqrt{4}+2) = \sqrt{4}-\varepsilon = \sqrt{p} \quad \text{✓}$$

Ⓟ

$$\Rightarrow^* (\sqrt{4}-2-2\sqrt{p}+\sqrt{4}+2)^p = (2\sqrt{4}-2\sqrt{p})^p = \varepsilon (\sqrt{4}-\sqrt{p})^p$$

$$\Rightarrow \varepsilon (4+p - \frac{2\sqrt{4p}}{\varepsilon\sqrt{p}}) \Rightarrow 14(2-\sqrt{p}) = \frac{4}{\varepsilon} (2-\sqrt{p})$$

$$\boxed{t=14} \quad \text{✓}$$

$$a = \sqrt[p]{4-\varepsilon\sqrt{p}} = \sqrt[p]{(2-\sqrt{p})^2} = \sqrt{2-\sqrt{p}} \Rightarrow a^p = 2-\sqrt{p} \quad \text{سوال ٧}$$

$$\frac{1}{a^p} = \frac{1}{2-\sqrt{p}} \times \frac{2+\sqrt{p}}{2+\sqrt{p}} = \frac{2+\sqrt{p}}{1} = 2+\sqrt{p}$$

$$(a + \frac{1}{a} + \sqrt{p})^p (a + \frac{1}{a} - \sqrt{p})^p = (a + \frac{1}{a})^p - (\sqrt{p})^p \quad \text{Ⓟ}$$

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

$$p^t = p^{\varepsilon} \Rightarrow \boxed{t=\varepsilon} \quad \text{✓}$$

$$A = \sqrt[p]{4\sqrt[p]{14}} \left(\frac{1}{p}\right)^{-\frac{\varepsilon}{p}} = p^{\frac{p}{\omega}} \times \frac{\varepsilon}{\omega} \times \frac{\varepsilon}{p} = p^{\frac{p_0}{\omega}} = \varepsilon \quad \text{سوال ١}$$

$$(2A)^{-\frac{1}{p}} = (2 \times \varepsilon)^{-\frac{1}{p}} = \frac{1}{\sqrt[p]{2 \times p^{\omega}}} = \frac{1}{\sqrt[p]{2 \times p^{\omega}}} \quad \text{Ⓟ}$$

Date:

Sat. Sun. Mon. Tue. Wed. Fri.

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$$\left(\sqrt[n]{a}\right)^n = \left(n \sqrt[n]{a^{\frac{1}{n}}}\right)^n \Rightarrow a = n \sqrt[n]{a^{\frac{1}{n}}}$$

سوال 9:

$$\frac{a^{\frac{1}{n}}}{a} = n^{-n} \rightarrow a^{\frac{1}{n}} = n^{-n} \xrightarrow{\frac{1}{1-n}} (a^{\frac{1}{n}})^{\frac{1}{1-n}} = (n^{-n})^{\frac{1}{1-n}}$$

$$a = n^{-\frac{n}{1-n}} = n^{\frac{n}{n-1}} = \frac{1}{n^{\frac{n}{n-1}}} = \frac{1}{\sqrt[n-1]{n}} = \frac{1}{n \sqrt[n-1]{n}} \rightarrow \frac{1}{a} - n = n \sqrt[n-1]{n}$$

$$\frac{\frac{1}{a} - n}{\sqrt[n-1]{n} + 1} = \frac{n(\sqrt[n-1]{n} - 1)}{\sqrt[n-1]{n} + 1} \times \frac{\sqrt[n-1]{n} - 1}{\sqrt[n-1]{n} - 1} = \frac{n(\sqrt[n-1]{n} - 1)^2}{n} = \frac{n}{n} \times (n+1 - n \sqrt[n-1]{n})$$

$$\Rightarrow n(1 - \sqrt[n-1]{n}) = 1 - n \sqrt[n-1]{n}$$

سوال 10:

$$\sqrt{x+a} - \sqrt{x-\varepsilon} = 2 \rightarrow (\sqrt{x+a}) = (\sqrt{x-\varepsilon} + 2)^2 \rightarrow x+a = (x-\varepsilon) + \varepsilon \sqrt{x-\varepsilon} + 4$$

$$\sqrt{x+a} + \sqrt{x-\varepsilon} - 2 = ? \quad x+a = x + \varepsilon \sqrt{x-\varepsilon}$$

$$\Rightarrow a = \varepsilon \sqrt{x-\varepsilon}$$

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$$\sqrt{x+a} = \sqrt{x+\varepsilon \sqrt{x-\varepsilon}} \rightarrow \sqrt{x+a} + \sqrt{x-\varepsilon} - 2 = 2 + \sqrt{x-\varepsilon} - 2 = \sqrt{x-\varepsilon}$$

آواهای دهم

دو عبارت داده شده در صورت سوال یاد آور افتاد مزدوج است ...!

$$(\sqrt{x+a} - \sqrt{x-4}) (\sqrt{x+a} + \sqrt{x-4}) = x+a - x - (-4) = a+4$$

r t

$$rt = a+4 \rightarrow t = \frac{a}{r} + r \rightsquigarrow t-r = \frac{a}{r} + r-r = \frac{a}{r}$$

$$\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2} = \frac{\sqrt{2}+\sqrt{5}}{\sqrt{2}(\sqrt{5}+\sqrt{2})} = \frac{1}{\sqrt{2}}$$

۲-ب

$$(\sqrt{3-\sqrt{5}} - \sqrt{3+\sqrt{5}})^2 = 3-\sqrt{5} + 3+\sqrt{5} - 2\sqrt{9-5} = 4-4 = 0$$

$$\rightarrow b^2 = 2 \xrightarrow{b < 0} b = -\sqrt{2} \rightarrow \frac{1}{\sqrt{2}} \times (-\sqrt{2}) = -1$$

۳-الف

$$\frac{\sqrt{1} + \sqrt{2}\sqrt{3}}{5 - \sqrt{4}} = \frac{2\sqrt{2} + 3\sqrt{3}}{5 - \sqrt{2}} \times \frac{5 + \sqrt{2}}{5 + \sqrt{2}} = \frac{10\sqrt{2} + 4\sqrt{3} + 15\sqrt{3} + 9\sqrt{2}}{19} = \sqrt{2} + \sqrt{3}$$

$$(\sqrt[4]{9} - 1)^{-1} = \frac{1}{\sqrt[4]{9} - 1} = \frac{\sqrt[4]{9} + 1}{2} \rightsquigarrow \sqrt{2} + \sqrt{3} - (\sqrt{3} + 1) = \sqrt{2} - 1$$

۳-ب

$$\frac{3\sqrt{3} - 1}{4 + \sqrt{3}} \times \frac{4 - \sqrt{3}}{4 - \sqrt{3}} = \frac{12\sqrt{3} - 4 - 4 + \sqrt{3}}{13} = \sqrt{3} - 1$$

$$\frac{1}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} = \frac{2 + \sqrt{3}}{1}$$

$$\left. \begin{array}{l} \sqrt{3} - 1 + 2 + \sqrt{3} = 2\sqrt{3} + 1 \end{array} \right\}$$

ع-الف

$$\sqrt{1 + \sqrt{3}} + \sqrt{\sqrt{3} - 1} = A$$

$$A^2 = 1 + \sqrt{3} + \sqrt{3} - 1 + 2\sqrt{\sqrt{3} - 1} = 2\sqrt{3} + 2\sqrt{2}$$

$$A = \sqrt{2}(\sqrt{\sqrt{3} + \sqrt{2}})$$

$$\frac{\sqrt{2}(\sqrt{\sqrt{3} + \sqrt{2}})}{\sqrt{\sqrt{3} - \sqrt{2}}} = \sqrt{2} \sqrt{\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}} = \sqrt{2} \sqrt{\frac{(\sqrt{3} + \sqrt{2})^2}{3 - 2}} = \sqrt{2}(\sqrt{3} + \sqrt{2}) = \sqrt{6} + 2 \xrightarrow{-2} \text{عبارت} = \sqrt{6}$$