

۶+۵+۴+۳+۲+۱
۲۶ ۷۲

به نام خدا

۲۰

تکلیف ۲۱

Subject: ادبیات رضائی دوم

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Date :

$$1 \quad 11 + 31 + 51 + \dots + 251 = 1 + 9 + 17 + \dots + 251 \rightarrow \text{یکان: ۷}$$

۲ به دلیل وجود عامل ۵ و یکان ۷ صفر شود

$$3 \quad 21 + 41 + 61 + \dots + 261 = 4 + 24 + 44 + \dots + 261 \rightarrow \text{یکان: ۶}$$

$$4 \quad 6 \times 7 = 42 \quad \checkmark$$

$$5 \quad \text{الف)} \quad \sqrt[4]{(4+\sqrt{7})^{-1}} \sqrt{1+\sqrt{7}} = \sqrt[4]{(4+\sqrt{7})^{-1}} \times \sqrt[4]{(1+\sqrt{7})^2} = \sqrt[4]{\frac{1+\sqrt{7}+2\sqrt{7}}{4+\sqrt{7}}} \quad \text{۲}$$

$$7 \quad = \sqrt[4]{2} \quad \checkmark$$

$$8 \quad \text{ب)} \quad \left(\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2} \right) (\sqrt{3}-\sqrt{5} - \sqrt{3+\sqrt{5}}) = \frac{\sqrt{2}}{2} \times -\sqrt{2} = -1 \quad \checkmark$$

$$10 \quad \frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2} \times \frac{\sqrt{10}-2}{\sqrt{10}-2} = \frac{\sqrt{20}-\sqrt{10}+\sqrt{50}-2\sqrt{2}}{10-4} = \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2}$$

$$12 \quad \sqrt{3}-\sqrt{5} - \sqrt{3+\sqrt{5}} = x \rightarrow (\sqrt{3}-\sqrt{5} - \sqrt{3+\sqrt{5}})^2 = x^2$$

$$13 \quad \rightarrow 3-\sqrt{5} + 3+\sqrt{5} - 2\sqrt{3^2-\sqrt{5}} = x^2 \quad x^2 = 2 \quad \text{۲}$$

$$14 \quad x < \frac{+\sqrt{2}}{-\sqrt{2}} \quad \checkmark \rightarrow |\sqrt{3}-\sqrt{5} - \sqrt{3+\sqrt{5}}| < 0$$

$$16 \quad \text{الف)} \quad \frac{\sqrt{1}+\sqrt{27}}{5-\sqrt{6}} - 2(\sqrt[4]{9}-1)^{-1} = \sqrt{3}+\sqrt{2} - \sqrt{3}-1 = \sqrt{2}-1 \quad \text{۳}$$

$$17 \quad \frac{\sqrt{1}+\sqrt{27}}{5-\sqrt{6}} = \frac{2\sqrt{2}+3\sqrt{3}}{5-\sqrt{6}} \times \frac{5+\sqrt{6}}{5+\sqrt{6}} = \frac{10\sqrt{2}+15\sqrt{3}+2\sqrt{12}+3\sqrt{18}}{25-6}$$

$$19 \quad = \frac{19\sqrt{2}+19\sqrt{3}}{19} = \sqrt{2}+\sqrt{3} \quad -2(\sqrt[4]{9}-1)^{-1} = -2 \times \frac{1}{\sqrt{3}-1} = \frac{-2}{\sqrt{3}-1}$$

$$20 \quad \frac{-2}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{-2\sqrt{3}-2}{2} = -\sqrt{3}-1$$

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$$\rightarrow) \frac{\sqrt{17}-1}{5+\sqrt{17}} + (2-\sqrt{17})^{-1} = \frac{\sqrt{17}-1}{5+\sqrt{17}} + \frac{1}{2-\sqrt{17}} = \frac{\sqrt{17}-1}{5+\sqrt{17}} + \frac{2+\sqrt{17}}{(2-\sqrt{17})(2+\sqrt{17})} = \frac{\sqrt{17}-1}{5+\sqrt{17}} + \frac{2+\sqrt{17}}{-3} = \frac{\sqrt{17}-1}{5+\sqrt{17}} - \frac{2+\sqrt{17}}{3}$$

$$\frac{\sqrt{17}-1}{5+\sqrt{17}} \times \frac{5-\sqrt{17}}{5-\sqrt{17}} = \frac{5\sqrt{17}-5-9+\sqrt{17}}{25-17} = \frac{6\sqrt{17}-14}{8} = \frac{3\sqrt{17}-7}{4}$$

$$(2-\sqrt{17})^{-1} = \frac{1}{2-\sqrt{17}} \times \frac{2+\sqrt{17}}{2+\sqrt{17}} = \frac{2+\sqrt{17}}{-3}$$

$$\text{الف) } \frac{\sqrt{1+\sqrt{17}}+\sqrt{17}-1}{\sqrt{17}-\sqrt{17}} - 2 = \frac{2+\sqrt{17}-2}{\sqrt{17}-\sqrt{17}} = \frac{\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{\sqrt{17}}{0}$$

$$\frac{\sqrt{1+\sqrt{17}}+\sqrt{17}-1}{\sqrt{17}-\sqrt{17}} = x \rightarrow x^2 = \frac{1+\sqrt{17}+\sqrt{17}-1+2\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{4\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{4\sqrt{17}}{0}$$

$$\rightarrow x^2 = \frac{2\sqrt{17}+2\sqrt{17} \times \sqrt{17}+\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{4+17+2\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{21+2\sqrt{17}}{\sqrt{17}-\sqrt{17}} = \frac{21+2\sqrt{17}}{0}$$

$$\rightarrow x = \frac{-2-\sqrt{17}}{2+\sqrt{17}}$$

$$\rightarrow) \frac{\sqrt[5]{17}}{\sqrt[5]{17}} \times \sqrt[5]{17} \times \sqrt[5]{17} = \sqrt[5]{17} \times \sqrt[5]{17} \times \sqrt[5]{17} = \sqrt[5]{17^3}$$

$$\frac{1}{17} \times \frac{1}{17} \times \frac{1}{17} = \frac{1}{17^3} = \frac{1}{17^3}$$

$$17^2 + 17 \times 17 + 17 \times 17 + 17 \times 17 + 17 \times 17 + 17 \times 17 + 17 \times 17$$

$$17^2 \times 2 + 17 \times 17 + 17^2 + 17 \times 17 + 17 \times 17 + 17 \times 17 + 17 \times 17$$

$$= 17^2 (1 + 17 + 17 + 17 + 17 + 17 + 17) = 17^2 \times 7 = 17^2 \times 7 = 17^2 \times 7$$

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$$\rightarrow 17^2 \times 17 \times 17 = 17^2 \times 17^2 = 17^4 = 17^4$$

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$$\rightarrow r^x = r^{x-r} \times r^r \rightarrow r^{x-r} = r^{x-r} \rightarrow x=r$$

$$(a-b)^r \times (a+b)^r = t(r\sqrt{r})$$

$$\rightarrow (a-b)^r \times (a+b)^r = t(r\sqrt{r})$$

$$\rightarrow (a-b) \times (a+b)^r = t(r\sqrt{r}) \rightarrow (a^r - b^r)^r = t(r\sqrt{r})$$

$$\rightarrow (\sqrt{\sqrt{r}-r} - \sqrt{\sqrt{r}+r})^r = t(r\sqrt{r}) = (\sqrt{r-1} + \sqrt{r+1} - r\sqrt{r})$$

$$\rightarrow (r\sqrt{r} - r\sqrt{r})^r = t(r\sqrt{r}) \rightarrow r^{r+1} - r(r\sqrt{r})$$

$$= r^2 - 1 \times \sqrt{r} = t(r\sqrt{r}) \rightarrow t=1$$

$$\left(\left(a + \frac{1}{a} + \sqrt{r} \right) \left(a + \frac{1}{a} - \sqrt{r} \right) \right)^{\frac{r}{r}} = r^{\frac{r}{r}} \rightarrow \left(a + \frac{1}{a} \right)^{\frac{r}{r}} = r^{\frac{r}{r}} \quad \checkmark$$

$$\rightarrow a^{\frac{r}{r}} + \frac{1}{a^{\frac{r}{r}}} + \cancel{r} - \cancel{r} = r^{\frac{r}{r}} = a^{\frac{r}{r}} + \frac{1}{a^{\frac{r}{r}}} = r^{\frac{r}{r}} \rightarrow \frac{\left(\sqrt{r} - r\sqrt{r} \right)^{\frac{r}{r}}}{\left(r\sqrt{r} - r\sqrt{r} \right)^{\frac{r}{r}}}$$

$$= r^{\frac{r}{r}} \rightarrow \frac{\sqrt{(r - \sqrt{r})^{\frac{r}{r}}} + \frac{1}{\sqrt{(r - \sqrt{r})^{\frac{r}{r}}}}}{\sqrt{(r - \sqrt{r})^{\frac{r}{r}}}} = r^{\frac{r}{r}} \quad \checkmark$$

$$\rightarrow r - \sqrt{r} + \frac{1}{r - \sqrt{r}} = r^{\frac{r}{r}} \rightarrow \frac{r - r\sqrt{r} + 1}{r - \sqrt{r}} = r^{\frac{r}{r}} \quad \gamma$$

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$$\rightarrow \frac{r - r\sqrt{r}}{r - \sqrt{r}} = r^{\frac{r}{r}} \rightarrow r^{\frac{r}{r}} = r \rightarrow \frac{r}{r} = r \rightarrow \boxed{r = r}$$

$$A = \sqrt{r} \sqrt{1/r} \left(\frac{1}{r}\right)^{-\frac{r}{2}} = \sqrt{r} \times r^{\frac{r}{2}} = r^{\frac{r}{2}} \times r^{\frac{r}{2}} = r^r = \boxed{1}$$

$$(rA)^{-\frac{1}{r}} = (r \times r^r)^{-\frac{1}{r}} = (r^r)^{-\frac{1}{r}} = r^{-1} = \frac{1}{r} \quad \boxed{2}$$

$$\sqrt[r]{a} = r \sqrt[r]{a}^{\frac{1}{r}} \Rightarrow a^{\frac{1}{r}} = r \times a^{\frac{1}{r}} \xrightarrow{\text{cancel}} a = r \times a^{\frac{1}{r}} \quad \boxed{9}$$

$$\Rightarrow 1 = r \times a^{\frac{1}{r}-1} \Rightarrow a^{\frac{1}{r}-1} = \frac{1}{r} \Rightarrow a^{\frac{1-r}{r}} = \frac{1}{r} \quad \boxed{4}$$

$$\Rightarrow a^{\frac{1-r}{r}} = \frac{1}{r} \Rightarrow a = \left(\frac{1}{r}\right)^{\frac{r}{1-r}} = \frac{1}{r^{\frac{r}{1-r}}} \quad \boxed{10}$$

$$\frac{\frac{1}{a} - r}{1 + \sqrt{r}} = \frac{r\sqrt{r} - r}{\sqrt{r} + 1} \times \frac{\sqrt{r} - 1}{\sqrt{r} - 1} = \frac{r - r\sqrt{r} - r\sqrt{r} + r}{r} = \frac{r - 2r\sqrt{r}}{r} = 1 - 2\sqrt{r} \quad \checkmark$$

$$\sqrt{x+a} - \sqrt{x-r} = r \quad \boxed{10}$$

$$(\sqrt{x+a} - \sqrt{x-r}) (\sqrt{x+a} + \sqrt{x-r}) = (x+a) + (x-r) = 2x + a - r \quad \boxed{15}$$

$$\frac{a+r}{r} \Rightarrow \sqrt{x+a} + \sqrt{x-r} \quad \frac{a}{r} + r - r = \frac{a}{r} \quad \checkmark$$