

کلاس: دوم دختر

پایه ششم ریاضی: شماره ۲۱

نام و نام خانوادگی: آنا و شاه پیری

$$(1+3+5+\dots+201) + (2+4+6+\dots+202) = 20300$$

$$1+3+5+\dots+201 = 20300 - 20300 = 0$$

$$2+4+6+\dots+202 = 20300 - 0 = 20300$$

$$20300 = 203 \times 100 \rightarrow \text{رقم یکان} = 0$$

از عدد ۱ تا ۲۰۲ هر عدد را به دو عدد اول و دوم تقسیم می‌کنیم و جمع می‌کنیم. این هم رقم یکان جمع است و پس عددهای قبل از این را هم جمع می‌کنیم و یکان را به دست می‌آوریم.

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

$$\sqrt{2} \text{ جواب}$$

$$\left(\sqrt{2+\sqrt{5}} - \sqrt{3-\sqrt{5}} \right)^2 = \left(\sqrt{2+\sqrt{5}} \right)^2 - 2\sqrt{(2+\sqrt{5})(3-\sqrt{5})} + \left(\sqrt{3-\sqrt{5}} \right)^2 = 2+2\sqrt{5} - 2\sqrt{6-5} + 3-2\sqrt{5} = 5-2=3$$

$$\left(\sqrt{3-\sqrt{5}} - \sqrt{2+\sqrt{5}} \right)^2 = \left(\sqrt{3-\sqrt{5}} \right)^2 - 2\sqrt{(3-\sqrt{5})(2+\sqrt{5})} + \left(\sqrt{2+\sqrt{5}} \right)^2 = 3-2\sqrt{5} - 2\sqrt{6-5} + 2+2\sqrt{5} = 5-2=3$$

$$\sqrt{3-\sqrt{5}} - \sqrt{2+\sqrt{5}} = \frac{1}{\sqrt{3-\sqrt{5}} + \sqrt{2+\sqrt{5}}} = \frac{1}{\sqrt{5}-1} = \frac{\sqrt{5}+1}{4}$$

معنی است عددهای اول و دوم را جمع می‌کنیم

$$\frac{\sqrt{2+\sqrt{5}}}{\sqrt{5}-1} \times \frac{\sqrt{5}+1}{\sqrt{5}+1} = \frac{\sqrt{2+\sqrt{5}}(\sqrt{5}+1)}{5-1} = \frac{\sqrt{2+\sqrt{5}}(\sqrt{5}+1)}{4}$$

$$\frac{\sqrt{2+\sqrt{5}}(\sqrt{5}+1)}{4} = \frac{19}{4} \rightarrow \sqrt{2+\sqrt{5}} = \frac{19}{4(\sqrt{5}+1)} = \frac{19(\sqrt{5}-1)}{4(5-1)} = \frac{19(\sqrt{5}-1)}{16}$$

$$\sqrt{2+\sqrt{5}} = \frac{19(\sqrt{5}-1)}{16} \rightarrow \sqrt{2+\sqrt{5}} = \frac{19(\sqrt{5}-1)}{16}$$

$$\frac{\sqrt{2+\sqrt{5}}}{\sqrt{5}+1} = \frac{19(\sqrt{5}-1)}{16(\sqrt{5}+1)} = \frac{19(\sqrt{5}-1)(\sqrt{5}-1)}{16(5-1)} = \frac{19(5-2\sqrt{5}+1)}{64} = \frac{19(6-2\sqrt{5})}{64} = \frac{19(3-\sqrt{5})}{32}$$

$$\frac{19(3-\sqrt{5})}{32} = \frac{19(3-\sqrt{5})}{32} = \frac{19(3-\sqrt{5})}{32}$$

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

$$\sqrt{6} \text{ جواب}$$

$$\sqrt{1+\sqrt{3}} \times \sqrt{3-\sqrt{3}} = \sqrt{(1+\sqrt{3})(3-\sqrt{3})} = \sqrt{3-\sqrt{3}+3\sqrt{3}-3} = \sqrt{2\sqrt{3}} = \sqrt{2} \times \sqrt{\sqrt{3}} = \sqrt{2} \times \sqrt[4]{3} = \sqrt[4]{12}$$

$$\sqrt[4]{12} = \sqrt[4]{12} = \sqrt[4]{12}$$

$$\frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}}$$

$$\frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}}$$

$$\frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}}$$

$$\frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}} = \frac{1^x + 2^x + 3^x + 4^x + 5^x}{1^{x-1} + 2^{x-1} + 3^{x-1} + 4^{x-1} + 5^{x-1}}$$

$$(a^2 + b^2 - 2ab)^2 (a^2 + b^2 + 2ab)^2 = 2(2 - \sqrt{2})$$

$$b = \sqrt[4]{2\sqrt{2} + 2} \quad a = \sqrt[4]{2\sqrt{2} - 2}$$

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

$$(\sqrt{2} - 2 - 2\sqrt{(2\sqrt{2}+2)(2\sqrt{2}-2)} + \sqrt{2} + 2)^2 = (2\sqrt{2} - 2\sqrt{2})^2 = (2(\sqrt{2} - \sqrt{2}))^2 = (2(0))^2 = 0$$

جواب: $\boxed{14}$

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

$$a = \sqrt[4]{2\sqrt{2} - 2}$$

$$((a + \frac{1}{a})^2 - (\sqrt{2})^2)^2 \rightarrow (a^2 + \frac{1}{a^2} + 2 - 2)^2 = (a^2 + \frac{1}{a^2})^2 = (2\sqrt{2} - 2 + \frac{1}{2\sqrt{2} - 2})^2 =$$

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

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

$$A = \sqrt[4]{2\sqrt{2} - 2} \left(\frac{1}{A}\right)^{\frac{2}{3}}$$

$$(2A)^{\frac{1}{3}} = ? \rightarrow A = \sqrt[4]{2\sqrt{2} - 2} \times \frac{1}{A^{\frac{2}{3}}} \rightarrow \sqrt[4]{2\sqrt{2} - 2} \times \frac{1}{A^{\frac{2}{3}}} \rightarrow$$

$$\frac{1}{A^{\frac{2}{3}}} \times \frac{1}{A^{\frac{2}{3}}} = \frac{1}{A^{\frac{4}{3}}} = \frac{1}{2\sqrt{2} - 2} = \frac{1}{2(\sqrt{2} - 1)}$$

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$$\sqrt[4]{a} = 2\sqrt[4]{a} \rightarrow a = 2\sqrt[4]{a} \rightarrow \frac{a}{2} = \sqrt[4]{a} \rightarrow a^{\frac{1}{2}} = 2 \rightarrow a = 4$$

$$\frac{1}{a} - 2 \rightarrow \frac{1}{4} - 2 = -\frac{7}{4}$$

$$\frac{2(\sqrt{2}-1)}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}-1} = \frac{2(\sqrt{2}-1)^2}{2-1} = \frac{2(2-2\sqrt{2}+1)}{1} = 2(3-2\sqrt{2}) = 6-4\sqrt{2}$$

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

$$\sqrt{x+a} + \sqrt{x-a} = ?$$

$$(\sqrt{x+a} - \sqrt{x-a})(\sqrt{x+a} + \sqrt{x-a}) = x+a - x+a = 2a \rightarrow \sqrt{x+a} + \sqrt{x-a} = \frac{2a}{2} = a$$

$$\frac{a+2}{2} - 2 = \frac{a+2}{2} - \frac{4}{2} = \frac{a-2}{2}$$

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