

Решите уравнение: $\frac{(1-5x)^2}{48} - \frac{(2x-1)(2x+1)}{6} = \frac{x+0,25x^2}{12}$

$$\frac{(1-5x)^2}{48} - \frac{(2x-1)(2x+1)}{8} = \frac{x+0,25x^2}{12} \quad | \times 48$$

$$(1-5x)^2 - 6(2x-1)(2x+1) = 4(x+0,25x^2)$$

$$(a-b)^2 = a^2 - 2ab + b^2$$



$$1^2 - 2 * 1 * 5x + (5x)^2 - 6((2x)^2 - 1^2) = 4x + x^2$$

$$(a-b)(a+b) = a^2 - b^2$$

$$1 - 10x + 25x^2 - 24x^2 + 6 = 4x + x^2$$

$$\underline{1} - \underline{10x} + \underline{25x^2} - \underline{24x^2} + \underline{6} - \underline{4x} - \underline{x^2} = 0$$

$$-14x + 7 = 0$$

$$-14x = -7$$

$$x = (-7):(-14)$$

$$x = \frac{7}{14}$$

$$x = \frac{1}{2}$$

Ответ: $x = 0,5$

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Упростите выражение $\frac{x^2-1}{x} \times \left(\frac{1}{x-1} - \frac{1}{1+x} + 1 \right)$ и найдите его значение при $x=1/2$

$$\begin{aligned} \frac{x^2-1}{x} \times \left(\frac{1}{x-1} - \frac{1}{1+x} + 1 \right) &= \frac{x^2-1}{x} \times \frac{(1+x) - (x-1) + (x-1)(1+x)}{(x-1)(1+x)} = \\ &= \frac{x^2-1}{x} \times \frac{1+x-x+1+(x^2-1^2)}{(x-1)(1+x)} = \frac{x^2-1}{x} \times \frac{1+x-x+1+x^2-1^2}{(x-1)(1+x)} = \\ &= \frac{x^2-1}{x} \times \frac{1+x^2}{(x-1)(1+x)} = \frac{(x-1)(x+1)}{x} \times \frac{1+x^2}{(x-1)(1+x)} = \\ &= \frac{\cancel{(x-1)}\cancel{(x+1)}(1+x^2)}{x\cancel{(x-1)}\cancel{(1+x)}} = \frac{1+x^2}{x} \end{aligned}$$



Если $x = \frac{1}{2}$, то $\frac{1 + \left(\frac{1}{2}\right)^2}{\frac{1}{2}} = \left(1 + \frac{1}{4}\right) : \frac{1}{2} = \left(\frac{4}{4} + \frac{1}{4}\right) : \frac{1}{2} = \frac{5}{4} \times \frac{2}{1} = \frac{5}{2} = 2,5$