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 Lista de Exercícios - Matemática

1) Resolva as equações a seguir:

a)  $2(x+4) + 5(x+2) = 2x + 12$   
 $2x + 8 + 5x + 10 = 2x + 12$   
 $2x + 5x - 2x = +12 - 8 - 10$   
 $+5x = -6$   
 $x = -\frac{6}{5}$

c)  $10Y - 5(1+Y) = 3(2Y-2) - 20$   
 $10Y - 5 - 5Y = 6Y - 6 - 20$   
 $10Y - 5Y - 6Y = -6 - 20 + 5$   
 $-Y = -21 \quad \times (-1)$   
 $Y = +21$

b)  $23x - 16 = 14 - 17x$   
 $23x + 17x = 14 + 16$   
 $40x = 30$   
 $x = \frac{30}{40} \Rightarrow x = \frac{3}{4}$

d)  $18x - 43 = 65$   
 $18x = 65 + 43$   
 $18x = 108$   
 $x = \frac{108}{18} \Rightarrow x = +6$

e)  $\frac{(x-5)}{10} + \frac{(1-2x)}{5} = \frac{(3-x)}{4}$   
 $\frac{(x-5)}{10} + \frac{(1-2x)}{5} = \frac{(3-x)}{4}$   
 $\frac{2x-10}{20} + \frac{4-8x}{20} = \frac{15-5x}{20}$   
 $2x-10+4-8x = 15-5x$   
 $2x-8x+5x = 15+10-4$   
 $-X = +21 \quad \times (-1)$   
 $x = -21$

10, 5, 4 | 2  
 5, 5, 2 | 2  
 5, 5, 1 | 5  
 1, 1, 1 | 20

f)  $4(x+6) - x = 5x + 10$   
 $4x + 24 - x = 5x + 10$   
 $4x - x - 5x = 10 - 24$   
 $4x - 6x = -14$   
 $-2x = -14$   
 $-x = -\frac{14}{2}$   
 $-x = -7 \quad \times (-1)$   
 $x = +7$



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2) Se  $A = (x-y)/xy$ ,  $x = 2/5$  e  $y = 1/2$ , então determine o valor de A.

$$A = \left( \frac{2}{5} - \frac{1}{2} \right) \rightarrow A = \left( \frac{4}{10} - \frac{5}{10} \right) \rightarrow A = -\frac{1}{10}$$

5	2	2
5	1	5
5	5	10

$$\rightarrow -\frac{1}{10} \rightarrow A = -\frac{1}{10} \times \frac{10}{2} \rightarrow A = -\frac{10}{20} \rightarrow A = -\frac{1}{2}$$

3) Determine o valor da expressão  $a - \left( \frac{ax - x^2}{x+a} \right)$  para  $a = 3/5$  e  $x = 4/5$ .

$$\frac{3}{5} - \left( \frac{\frac{3}{5} \times \frac{4}{5} - \left( \frac{4}{5} \right)^2}{\frac{4}{5} + \frac{3}{5}} \right) \rightarrow \frac{3}{5} - \left( \frac{\frac{3 \times 4}{5 \times 5} - \frac{16}{25}}{\frac{4}{5} + \frac{3}{5}} \right) \rightarrow$$

$$\rightarrow \frac{3}{5} - \left( \frac{\frac{12}{25} - \frac{16}{25}}{\frac{4}{5} + \frac{3}{5}} \right) \rightarrow \frac{3}{5} - \left( \frac{-\frac{4}{25}}{\frac{7}{5}} \right) \rightarrow \frac{3}{5} - \left( \frac{-4 \times 5}{25 \times 7} \right) \rightarrow$$

$$\rightarrow \frac{3}{5} - \left( \frac{-20}{175} \right) \rightarrow \frac{3}{5} + \frac{20}{175} \rightarrow \frac{105 + 20}{175} \rightarrow$$

5	175	5
5	35	5
5	7	7
5	1	175

$$\rightarrow \frac{125 : 25}{175 : 25} = +\frac{5}{7}$$

4) Efetuar as operações dadas:



a)  $(-3)^2 + (-3)^2 = 9 + 9 = +18$ , (ops...)

a)  $(-3)^2 + (-3)^3 = 9 - 27 = -18$ , (esse sim KKK)

b)  $(-3)^2 + (-2)^5 = 9 + (-32) = 9 - 32 = -23$

c)  $2 - \left(\frac{2}{1} + \frac{3}{5}\right)^2 = 2 - \left(\frac{2}{1} + \frac{3}{5}\right) \times \left(\frac{2}{1} + \frac{3}{5}\right) = 2 - \left(\frac{10+3}{5}\right) \times \left(\frac{10+3}{5}\right)$

$2 - \left(\frac{13}{5}\right) \times \left(\frac{13}{5}\right) = \frac{2}{1} - \frac{169}{25} = \frac{50-169}{25} = \frac{-119}{25} \rightarrow -\frac{119}{25}$

d)  $\left(\frac{5}{2} - \frac{7}{8} + \frac{9}{10}\right)^2 = \left(\frac{100-35+36}{40}\right)^2 \rightarrow$

$= \left(\frac{101}{40}\right) \times \left(\frac{101}{40}\right) = +\frac{10201}{1600}$

2	8	10	2
1	4	5	2
1	2	5	2
1	1	5	5
1	1	1	40

e)  $-18 - 3 + 5 + 7 = +12 - 21 = -9$

f)  $\left(\frac{13}{5} - \frac{7}{8}\right)^3 \times \left(\frac{5}{3} + \frac{10}{12}\right)^2 = \left(\frac{104-35}{40}\right)^3 \times \left(\frac{20+10}{12}\right)^2 \rightarrow$

$= \left(\frac{69}{40}\right)^3 \times \left(\frac{30}{12}\right)^2 = \left(\frac{69}{40} \times \frac{69}{40} \times \frac{69}{40}\right) \times \left(\frac{30}{12} \times \frac{30}{12}\right) \rightarrow$

$= \left(\frac{328.509}{64000}\right) \times \left(\frac{900}{144}\right) = +\frac{295.658.100}{9.216.000} = +\frac{2956581}{92160}$

3	12	2
3	6	2
3	3	3
1	1	12

ou melhor...

$= \left(\frac{69}{40}\right)^3 \times \left(\frac{30}{12}\right)^2 \Rightarrow \left(\frac{69}{40}\right)^3 \times \left(\frac{5}{2}\right)^2 = \left(\frac{69}{40}\right)^3 \times \frac{25}{4} = \frac{69^3}{64000} \times \frac{25}{4} \rightarrow$

$= \frac{69^3}{4 \times 2560} = +\frac{69^3}{10240} = +\frac{328509}{10240}$



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$$g) \frac{(-2)^3}{1} + \frac{1}{3} \times \frac{7}{2} = \frac{-8}{1} + \left( \frac{1}{3} \times \frac{7}{2} \right) = \frac{-8}{1} + \frac{7}{6} = \frac{-48}{6} + \frac{7}{6} \rightarrow$$

$$= \frac{-41}{6} \quad \text{h) } \left( \frac{6}{9} + \frac{1}{2} - \frac{8}{7} \right)^2 \div \left( \frac{9}{10} + \frac{5}{10} \right)^3 = \begin{array}{l} 9, 2, 7 \{ 2 \\ 9, 1, 7 \{ 3 \\ 3, 1, 7 \{ 3 \\ 1, 1, 7 \{ 7 \\ 1, 1, 1 \{ 126 \end{array}$$

$$= \left( \frac{+84 + 63 - 144}{126} \right)^2 \div \left( \frac{14}{10} \right)^3 = \left( \frac{3}{126} \right)^2 \div \left( \frac{7}{5} \right)^3 \rightarrow$$

$$= \left( \frac{9}{15876} \right) \div \left( \frac{343}{125} \right) = \left( \frac{9}{15876} \right) \times \left( \frac{125}{343} \right) = \frac{1125}{5445468} \div 9 \rightarrow$$

$$= \frac{125}{605052} //$$

\* Ao final percebi que deveria ter simplificado a primeira fração, dentro do primeiro parênteses no início da operação. Teria poupado essa simplificação por "9" que foi feita ao final. "A cada dia novos aprendizados".

$$i) 2 + \{ 3 - [ 1 + (2 - 5 + 4) + 8 ] \} =$$

$$2 + \{ 3 - [ 1 + (2 - 1) + 8 ] \} =$$

$$2 + \{ 3 - [ 1 + 1 + 8 ] \} =$$

$$2 + \{ 3 - 10 \} =$$

$$2 - 7 \Rightarrow -5 //$$

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