Resolução das atividades complementares - MAT7_05NUM10

1) Quais das expressões a seguir são equivalentes a 2^3 ?

$\left(\frac{2^4}{2}\right)^{3^0}$

$\left(\frac{4}{2^6}\right)^{-1} \times \frac{1}{2}$

$(2^8)^{-2} \times \left(\frac{1}{8}\right) \times (32^2)^0$

2) Utilize as propriedades de potência para simplificar a seguinte expressão:

$625^3 \times \left(\frac{3^4}{5^2}\right)^3 \times (2^5 \times 2^{-6})^2 \times \left(\frac{512}{243}\right)^2$

3) [Desafio] Calcule o quociente entre as expressões a seguir.

$(3^8)^{-3} \times \left(\frac{1}{8}\right) \times (64^{-2})^3$

$27^3 \times \left(\frac{32^4}{243^2}\right)^3$

Respostas:

1)

$\left(\frac{2^4}{2}\right)^{3^0} = (2^3)^{3^0} = (2^3)^1 = 2^3$

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

$(2^8)^{-2} \times \left(\frac{1}{8}\right) \times (32^2)^0 = 2^{-16} \times \left(\frac{1}{2^3}\right) \times 1 = 2^{-19}$

2)

$$625^3 \times \left(\frac{3^4}{5^2}\right)^3 \times \left(2^5 \times 2^{-6}\right)^2 \times \left(\frac{512}{243}\right)^2 = \left(5^4\right)^3 \times \frac{3^{12}}{5^6} \times \left(2^{10} \times 2^{-12}\right) \times \left(\frac{2^9}{3^5}\right)^2$$

$$= 5^{12} \times \frac{3^{12}}{5^6} \times 2^{-22} \times \frac{2^{18}}{3^{10}} = 5^6 \times 3^{12} \times 2^{-22} \times \frac{2^{18}}{3^{10}} = 5^6 \times 3^2 \times 2^{-4}$$

3)

$$\left(3^8\right)^{-3} \times \left(\frac{1}{8}\right) \times \left(64^{-2}\right)^3 = 3^{-24} \times \frac{1}{2^3} \times \left(\left(2^6\right)^{-2}\right)^3 = 3^{-24} \times \frac{1}{2^3} \times 2^{-36} = 3^{-24} \times 2^{-39}$$

$$27^3 \times \left(\frac{32^4}{243^2}\right)^3 = \left(3^3\right)^3 \times \left(\frac{\left(2^5\right)^4}{\left(3^5\right)^2}\right)^3 = 3^9 \times \left(\frac{2^{20}}{3^{10}}\right)^3 = 3^9 \times \frac{2^{60}}{3^{30}} = 3^{-21} \times 2^{60}$$

Fazendo o quociente, temos:

$$\frac{3^{-24} \times 2^{-39}}{3^{-21} \times 2^{60}} = 3^{-3} \times 2^{-99}$$