

Ricardo Lima Caboclo dos Santos Turma: CTA 171

Tarefa Básica

01. Sabendo-se que $\left[(3^5)^2 \cdot 3^{5^2} \right] : (3^3)^2 = 3^a$, então:

(A) $a = 10$

(B) $a = 14$

(C) $a = 19$

(D) $a = 24$

(E) $a = 29$

$$\begin{aligned} & \left[3^{10} \cdot 3^{25} \right] : 3^6 = 3^a \\ & 3^{35} : 3^6 = 3^a \\ & 3^{29} = 3^a \end{aligned}$$

Resposta: Alternativa "E" ($a = 29$)

02. Simplificando-se a expressão $[2^9 : (2^2 \cdot 2)^3]^{-3}$, obtém-se:

(A) 2^{36}

(B) 2^{-36}

(C) 2^{-6}

(D) 1

(E) $\frac{1}{3}$

$$\begin{aligned} & [2^9 : (2^2 \cdot 2)^3]^{-3} \\ & [2^9 : 2^9]^{-3} \\ & 1^{-3} \\ & \frac{1^3}{1} = 1 \end{aligned}$$

Resposta: Alternativa "D" (1)

03. O valor numérico da expressão $a^b \cdot 10^x$ para $a = 1000$, $b = 100$ e $x = 0,4$

(A) $10 \cdot (100^{2,4})$

(B) 1040

(C) $10^{3,8}$

(D) $10^{0,4}$

(E) $100^{3,8}$

$$1000 \cdot (100)^{0,4} =$$

$$10^3 \cdot (10^2)^{0,4} =$$

$$10^3 \cdot 10^{0,8} = \boxed{10^{3,8}}$$

Resposta: Alternativa "C" ($10^{3,8}$)

A metade de 4^{22} é:

(A) 2^{11}
(B) 2^{22}
(C) 2^{44}
(D) 4^{21}
X (E) 2^{43}

$$\frac{4^{22}}{2^1} = \frac{(2^2)^{22}}{2^1} = \frac{2^{44}}{2^1} = 2^{(44-1)} = \boxed{2^{43}}$$

Resposta: Alternativa "E" (2^{43})

05. Calculando $\frac{(0,1) \cdot (0,001) \cdot 10^{-1}}{10 \cdot (0,0001)}$, obtemos:

(A) 10^{-1}
X (B) 10^{-2}
(C) 10^2
(D) 10^3
(E) 10^4

$$\frac{10^{-1} \cdot 10^{-3} \cdot 10^{-1}}{10^1 \cdot 10^{-4}} = \frac{10^{-5}}{10^{-3}} = 10^{(-5 - (-3))} = 10^{-5+3} = \boxed{10^{-2}}$$

Resposta: Alternativa "B" (10^{-2})

06. Efetuando a divisão $e^x : e^{x-2}$, teremos:

(A) e^{-2}
(B) e^{x^2-2x}
(C) e^2
(D) $e^{\frac{x}{x-2}}$
(E) e^{2x}

$$\frac{e^x}{e^{x-2}} = e^{x - (x-2)} = e^{(x-x)+2} = e^2$$

Resposta: Alternativa "C" (e^2)

07. Se $7^{5y} = 243$, o valor de 7^{-y} é:

A) $\frac{1}{3}$

B) $\frac{1}{6}$

C) $\frac{1}{15}$

D) $\frac{1}{30}$

E) $-\frac{1}{3}$

$$7^{5y} = 243$$

$$7^{5y} = 3^5$$

$$\sqrt[5]{7^{5y}} = 3$$

$$7^y = 3$$

$$7^{-y} = \frac{1}{7^y} = \frac{1}{3}$$

$$\begin{array}{r|l} 243 & 3 \\ \hline 81 & 3 \\ 27 & 3 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array} \left. \vphantom{\begin{array}{r|l} 243 & 3 \\ \hline 81 & 3 \\ 27 & 3 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array}} \right\} 5$$

Resposta: Alternativa "A" $\left(\frac{1}{3}\right)$

08. (Mack) Se $5^x = m$ e $5^y = n$, $(0,04)^{-x+2y}$ vale:

A) $m^{-2} \cdot n^{-4}$

B) $m^{1/2} \cdot n^{-4}$

C) $m^2 \cdot n^{-1/4}$

D) $m^{-2} \cdot n^4$

E) $m^2 \cdot n^{-4}$

Não Consegui Resolver

09. (UEL) Se x e y são números reais, então:

A) $(3^x)^y = 3^{xy}$

B) $(2^x \cdot 3^y)^2 = 2^{2x} \cdot 3^{2y}$

C) $(2^x \cdot 3^x)^y = 2^{xy} \cdot 3^{xy} = 1^{xy}$

D) $5^x + 3^x = 8^x$

E) $3 \cdot 2^x = 6^x$

$$\boxed{x=1 \quad y=2}$$

b) $(2^1 \cdot 3^2)^2 = 2^{2 \cdot 1} \cdot 3^{2 \cdot 2}$

$$(2 \cdot 9)^2 = 2^2 \cdot 3^4$$

$$18^2 = 4 \cdot 81$$

$$324 = 324$$

R: Alternativa "B"