

Exercício Resolvidos:

1. Calcule as potências com expoente inteiro

a) $3^4 = 3 \times 3 \times 3 \times 3 = 81$

e) $(-2)^6 = (-2) \times (-2) \times (-2) \times (-2) \times (-2) \times (-2) = 64$

i) $[\sqrt{(7)}]^3 =$

$$(7^{\frac{1}{2}})^3 = 7^{\frac{3}{2}} = \sqrt{7^3} = \sqrt{343}$$

b) $(2,5)^2 = 2,5 \times 2,5 = 6,25$

f) $0^5 = 0$

j) $6^{-2} = \frac{1}{6^2} = \frac{1}{36}$

c) $(-2)^3 = (-2) \times (-2) \times (-2) = -8$

g) $5^0 = 1$

l) $(-2)^{-2} =$

ci)

$$\frac{1}{(-2)^2} = \frac{1}{4} = 0,25$$

d) $(1/2)^3 = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1 \cdot 1 \cdot 1}{2 \cdot 2 \cdot 2} = \frac{1}{8}$

h) $[\sqrt{(2)}]^2 =$

m) $(-3/2)^{-1} = \frac{-2}{3} = -0,67$

$$(2^{\frac{1}{2}})^2 = 2^{\frac{2}{2}} = 2^1 = 2$$

2. Calcule o valor de:

a) $x = (-1/3)^3 + [3^{-1} - (-3)^{-1}]^{-2} =$

$$\frac{-1}{3^3} + \left[\frac{1}{3} - \frac{1}{(-3)} \right]^{(-2)} = \frac{-1}{9} + \left[\frac{1}{3} + \frac{1}{3} \right]^{(-2)} = \frac{-1}{9} + \left[\frac{1+1}{3} \right]^{(-2)} = \frac{-1}{9} + \left[\frac{2}{3} \right]^{(-2)} = \frac{-1}{9} + \frac{3^2}{2^2} = \frac{-1}{9} + \frac{9}{4} = \frac{-4+81}{36} = \frac{77}{36}$$

b) $y = (2^{-2} + 2^2 - 2^{-1}) / (2^{-2} - 2^{-1})$

$$\frac{\frac{1}{2^2} + 4 - \frac{1}{2}}{\frac{1}{2^2} - \frac{1}{2}} = \frac{\frac{1}{4} + 4 - \frac{1}{2}}{\frac{1}{4} - \frac{1}{2}} = \frac{\frac{1+16-2}{4}}{\frac{1-2}{4}} = \frac{15}{-1} = \frac{15}{4} \cdot \frac{4}{-1} = \frac{15 \cdot 4}{4 \cdot (-1)} = \frac{60}{(-4)} = -15$$

3. Escreva como potência de base 10:

a) $10000 = 10^4$

c) $0,001 = 10^{-3}$

b) $100000/100 = 10^5 / 10^2 = 10^{5-2} = 10^3$

d) $0,0000001 = 10^{-7}$

4. calcule as potências

a) $5^{2/7} = \sqrt[7]{5^2} = \sqrt[7]{25}$

e) $9^{1/2} = \sqrt{9} = 3$

i) $7^{0,4} = 7^{\frac{4}{10}} = 7^{\frac{2}{5}} = \sqrt[5]{7^2} = \sqrt[5]{49}$

b) $2^{3/4} = \sqrt[4]{2^3} = \sqrt[4]{8}$

f) $0^{3/8} = 0$

j) $6^{-2/3} = \frac{1}{6^{\frac{2}{3}}} = \frac{1}{\sqrt[3]{6^2}} = \frac{1}{\sqrt[3]{36}}$

c) $(1/2)^{1/2} =$

g) $2^{1+1/3} =$

l) $(-2)^{-3/2} =$

$$\sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{1 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{1 \cdot \sqrt{2}}{2} = \frac{\sqrt{2}}{2}$$

$$2^{\frac{3+1}{3}} = 2^{\frac{4}{3}} = \sqrt[3]{2^4} = \sqrt[3]{16}$$

$$\frac{1}{(-2)^{\frac{3}{2}}} = \frac{1}{\sqrt{(-2)^3}} = \frac{1}{\sqrt{(-8)}} = \frac{1}{\sqrt{8} \sqrt{(-1)}}$$

d) $[\sqrt{(3)}]^{4/5} =$

h) $8^{0,666} =$

$$(3^{\frac{1}{2}})^{\frac{4}{5}} = 3^{\frac{1 \cdot 4}{2 \cdot 5}} = 3^{\frac{4}{10}} = 3^{\frac{2}{5}} = \sqrt[5]{3^2} = \sqrt[5]{9}$$

$$8^{\frac{2}{3}} = \sqrt[3]{8^2} = \sqrt[3]{64} = 4$$

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

5. calcule o valor de:

a) $(27^{1/3} + 64^{1/2} - 8^{-2/3} + 4^{1/2})^{1/2} =$

$$(\sqrt[3]{27} + \sqrt{64} - \sqrt[3]{8^{(-2)}} + \sqrt{4})^{\frac{1}{2}} = (3 + 8 - \sqrt[3]{\frac{1}{64}} + 2)^{\frac{1}{2}} = (13 - \frac{1}{4})^{\frac{1}{2}} = (\frac{52-1}{4})^{\frac{1}{2}} = \sqrt{\frac{51}{4}} = \frac{\sqrt{51}}{2}$$

$$b) [3^0 + (-2)^2 - (1/3)^{-1}] / (1/2)^{-2} =$$

$$\frac{(1 + 4 - 3)}{2^2} = \frac{2}{4} = \frac{1}{2} = 0,5$$

6. reduza a única potência

$$a) 7^4 \cdot 7^2 = 7^{4+2} = 7^6$$

$$e) 3^{10} / 3^4 = 3^{10-4} = 3^6$$

$$i) 5^{(2^3)} = 5^8$$

$$b) 3 \cdot 3^8 = 3^{8+1} = 3^9$$

$$f) a^6 / a = a^{6-1} = a^5$$

$$j) 7^{3^2} = 7^{3 \cdot 2} = 7^6$$

$$c) 2^3 \cdot 2^7 \cdot 2^2 = 2^{3+7+2} = 2^{12}$$

$$g) (2^5)^3 = 2^{5 \cdot 3} = 2^{15}$$

$$l) (2^7 \cdot 2^3) / 2^{-4} = 2^{7+3-(-4)} = 2^{14}$$

$$d) 5^9 : 5^2 = 5^{9-2} = 5^7$$

$$h) (2^6)^x = 2^{6x}$$

$$m) (3^4 \cdot 3)^{-2} = 3^{4 \cdot (-2)} 3^{(-2)} =$$

$$3^{(-8)} 3^{(-2)} = 3^{(-8-2)} = 3^{(-10)}$$

7. escreva em notação científica os seguintes números:

$$a) 500 = 0,5 \cdot 10^3$$

$$e) 0,034 = 34 \cdot 10^{-3}$$

$$i) 48000 = 48 \cdot 10^3$$

$$b) 0,0006 = 0,6 \cdot 10^{-3}$$

$$f) 0,8 = 800 \cdot 10^{-3}$$

$$j) 7000000000 = 7 \cdot 10^9$$

$$c) 0,00000025 = 0,25 \cdot 10^{-6}$$

$$g) 20,39$$

$$l) 923,1 = 0,92 \cdot 10^3$$

$$d) 0,002 = 2 \cdot 10^{-3}$$

$$h) 0,000008 = 8 \cdot 10^{-6}$$

$$m) 40400 = 40,4 \cdot 10^3$$

8. escreva o valor de cada número escrito em notação científica:

$$a) 8 \cdot 10^4 = 80.000$$

$$c) 3,52 \cdot 10^5 = 352.000$$

$$b) 5 \cdot 10^{-2} = 0,05$$

$$d) 1,6 \cdot 10^{-3} = 0,0016$$

Resolva as seguintes Somas:

a) $180\mu + 3m$	$= 180 \cdot 10^{-6} + 3 \cdot 10^{-3} = 0,180 \cdot 10^{-3} + 3 \cdot 10^{-3} = 3,180 \cdot 10^{-3}$
b) $10\mu + 100n$	$= 10 \cdot 10^{-6} + 100 \cdot 10^{-9} = 10 \cdot 10^{-6} + 0,1 \cdot 10^{-6} = 10,1 \cdot 10^{-6}$
c) $20\mu + 100p$	$= 20 \cdot 10^{-6} + 100 \cdot 10^{-12} = 20000 \cdot 10^{-9} + 0,1 \cdot 10^{-9} = 20000,1 \cdot 10^{-9}$
d) $5\mu + 25m$	$= 5 \cdot 10^{-6} + 25 \cdot 10^{-3} = 0,05 \cdot 10^{-3} + 25 \cdot 10^{-3} = 25,05 \cdot 10^{-3}$
e) $10G + 250M$	$= 10 \cdot 10^9 + 250 \cdot 10^6 = 10 \cdot 10^9 + 0,25 \cdot 10^9 = 10,25 \cdot 10^9$
f) $10G + 250M + 2M + 2G$	$= 10 \cdot 10^9 + 250 \cdot 10^6 + 2 \cdot 10^6 + 2 \cdot 10^9 =$ $10 \cdot 10^9 + 0,25 \cdot 10^9 + 0,002 \cdot 10^9 + 2 \cdot 10^9 = 12,252 \cdot 10^9$
g) $100k + 10M$	$= 100 \cdot 10^3 + 10 \cdot 10^6 = 0,10 \cdot 10^6 + 10 \cdot 10^6 = 10,10 \cdot 10^6$
h) $1\mu + 0,025m$	$= 1 \cdot 10^{-6} + 0,025 \cdot 10^{-3} = 1 \cdot 10^{-6} + 25 \cdot 10^{-6} = 26 \cdot 10^{-6}$
i) $100p + 0,01n$	$= 100 \cdot 10^{-12} + 0,01 \cdot 10^{-9} = 100 \cdot 10^{-12} + 10 \cdot 10^{-12} = 110 \cdot 10^{-12}$
j) $10\mu + 0,02m$	$= 10 \cdot 10^{-6} + 0,02 \cdot 10^{-3} = 10 \cdot 10^{-6} + 20 \cdot 10^{-6} = 30 \cdot 10^{-6}$
k) $1\mu + 0,025m$	$= 1 \cdot 10^{-6} + 0,025 \cdot 10^{-3} = 1 \cdot 10^{-6} + 25 \cdot 10^{-6} = 26 \cdot 10^{-6}$

Se houver correções me avisem!!!!