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## **GABARITO DA LISTA DE EXERCÍCIOS DE MATEMÁTICA** **(POTÊNCIA E PROPRIEDADES DA POTENCIAÇÃO)**

*Ensino Fundamental*  
*7º Ano*

**1-)**

a)  $10^2 = 10 \times 10 = 100$

b)  $(-3)^3 = (-3) \cdot (-3) \cdot (-3) = -27$

c)  $\left(-\frac{2}{3}\right)^3 = \left(-\frac{2}{3}\right) \cdot \left(-\frac{2}{3}\right) \cdot \left(-\frac{2}{3}\right) = -\frac{8}{27}$

d)  $(-5)^2 = (-5) \cdot (-5) = 25$

e)  $(-0,7)^2 = (-0,7) \cdot (-0,7) = (0,49)$

f)  $\left(+\frac{1}{2}\right)^4 = \left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right) = \frac{1}{16}$

g)  $\left(1\frac{1}{5}\right)^2 = \left(\frac{6}{5}\right)^2 = \left(\frac{6}{5}\right) \cdot \left(\frac{6}{5}\right) = \frac{36}{25}$

**2-)**

a)  $7^7 \cdot 7^2 = 7^{7+2} = 7^9$

b)  $(0,9)^{10} \cdot (0,9)^4 = (0,9)^{10+4} = (0,9)^{14}$

c)  $2 \cdot 2^2 \cdot 2^5 = 2^{1+2+5} = 2^8$

d)  $(-1,5)^{-2} \cdot (-1,5)^{-1} \cdot (-1,5)^{-3} = (-1,5)^{-2-1-3} = (-1,5)^{-6}$

e)  $(-9)^4 \cdot (-9)^2 \cdot (-9) \cdot (-9) = (-9)^{4+2+1+1} = (-9)^8$

$$\mathbf{f)} \left(\frac{1}{2}\right) \cdot \left(\frac{1}{2}\right)^{-2} = \left(\frac{1}{2}\right)^{1-2} = \left(\frac{1}{2}\right)^{-1}$$

$$\mathbf{g)} \left(-\frac{3}{5}\right)^{12} \cdot \left(-\frac{3}{5}\right)^4 = \left(-\frac{3}{5}\right)^{12+4} = \left(-\frac{3}{5}\right)^{16}$$

$$\mathbf{h)} \left(-\frac{1}{2}\right) \cdot \left(-\frac{1}{2}\right)^2 \cdot \left(-\frac{1}{2}\right)^5 = \left(-\frac{1}{2}\right)^{1+2+5} = \left(-\frac{1}{2}\right)^8$$

$$\mathbf{i)} \left(\frac{8}{9}\right) \cdot \left(\frac{8}{9}\right) = \left(\frac{8}{9}\right)^{1+1} = \left(\frac{8}{9}\right)^2$$

$$\mathbf{j)} \left(\frac{3}{2}\right)^{-3} \cdot \left(\frac{3}{2}\right)^{-3} \cdot \left(\frac{3}{2}\right)^6 = \left(\frac{3}{2}\right)^{-3-3+6} = \left(\frac{3}{2}\right)^0$$

**3-)**

$$\mathbf{a)} 10^6 \div 10^3 = 10^{6-3} = 10^3$$

$$\mathbf{b)} (-5)^8 \div (-5)^2 = (-5)^{8-2} = (-5)^6$$

$$\mathbf{c)} (0,9)^8 \div (0,9)^{10} = (0,9)^{8-10} = (0,9)^{-2}$$

$$\mathbf{d)} (-1,5)^{49} \div (-1,5)^{31} = (-1,5)^{49-31} = (-1,5)^{18}$$

$$\mathbf{e)} \left(\frac{1}{2}\right)^{-5} \div \left(\frac{1}{2}\right)^2 = \left(\frac{1}{2}\right)^{-5-2} = \left(\frac{1}{2}\right)^{-7}$$

$$\mathbf{f)} \left(\frac{5}{7}\right)^{18} \div \left(\frac{5}{7}\right) = \left(\frac{5}{7}\right)^{18-1} = \left(\frac{5}{7}\right)^{17}$$

$$\mathbf{g)} \frac{15^8}{15^4} = 15^{8-4} = 15^4$$

$$\mathbf{4-)} \mathbf{a)} (2^8)^2 = 2^{8 \cdot 2} = 2^{16}$$

$$\mathbf{b)} [(-1,2)^5]^7 = (-1,2)^{5 \cdot 7} = (-1,2)^{35}$$

$$\mathbf{c)} \left[ \left( \frac{3}{8} \right)^{-2} \right]^{10} = \left( \frac{3}{8} \right)^{(-2) \cdot 10} = \left( \frac{3}{8} \right)^{-20}$$

$$\mathbf{d)} (-9^3)^{-7} = (-9)^{3 \cdot (-7)} = (-9)^{-21}$$

$$\mathbf{e)} \left[ \left( -\frac{2}{7} \right)^{-4} \right]^{-2} = \left( -\frac{2}{7} \right)^{(-4) \cdot (-2)} = \left( -\frac{2}{7} \right)^8$$

**5-)**

$$\mathbf{a)} 5^2 \cdot 3^2 \cdot 2^2 = (5 \cdot 3 \cdot 2)^2 = (30)^2$$

$$\mathbf{b)} (-1,6)^2 \cdot (2)^2 = [(-1,6) \cdot (2)]^2 = (-3,2)^2$$

$$\mathbf{c)} (-30)^5 \cdot (-10)^5 = [(-30) \cdot (-10)]^5 = (300)^5$$

$$\mathbf{d)} \left( \frac{1}{2} \right)^8 \cdot \left( \frac{2}{3} \right)^8 \cdot \left( \frac{1}{6} \right)^8 = \left( \frac{1}{2} \cdot \frac{2}{3} \cdot \frac{1}{6} \right)^8 = \left( \frac{2}{36} \right)^8$$

$$\mathbf{e)} 75^4 \div 3^4 = (75 \div 3)^4 = 25^4$$

$$\mathbf{f)} (-1,60)^9 \div (-4)^9 = [(-1,60) \div (-4)]^9 = 0,4^9$$

$$\mathbf{g)} (30)^5 \div (-10)^5 = [30 \div (-10)]^5 = (-3)^5$$

$$\mathbf{h)} \left( \frac{3}{2} \right)^8 \div \left( \frac{2}{3} \right)^8 = \left[ \left( \frac{3}{2} \right) \cdot \left( \frac{3}{2} \right) \right]^8 = \left( \frac{9}{4} \right)^8$$

**6-)**

$$\mathbf{a)} x = 4$$

$$\mathbf{b)} x = 8$$

$$\mathbf{c)} x = 17$$

$$\mathbf{d)} x = 4$$

$$\mathbf{e)} x = 7$$

$$\mathbf{f)} x = 4$$

7-)

a)  $5^{-1} = \frac{1}{5}$

b)  $(-3)^{-1} = -\frac{1}{3}$

c)  $(-2,5)^{-2} = \left(-\frac{25}{10}\right)^{-2} = \left(-\frac{10}{25}\right)^2 = \frac{100}{625} = \frac{4}{25}$

d)  $\left(\frac{1}{2}\right)^{-4} = (2)^4 = 16$

e)  $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$

f)  $\left(-\frac{3}{4}\right)^{-2} = \left(-\frac{4}{3}\right)^2 = \frac{16}{9}$

8-)

a)  $10^{11} = 100.000.000.000$

b)  $10^3 = 1.000$

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

d)  $10^{-5} = 0,00001$

e)  $10^5 = 100.000$

9-)

a)  $10^4$

b)  $10^9$

c)  $10^{-7}$

d)  $10^{-5}$

10-)

**Opção: d)**  $a^c \div b^c = c^{a-b}$

11-)

a)  $x = 0$

b)  $x = -1$

c)  $x = -3$

d)  $x = 4$

**Resposta: Opção (c)**12-) **Opção: (c) 9**

$$\begin{aligned}
10^0 - 5^2 + (-5)^2 + 2^3 &= \\
= 1 - 25 + 25 + 8 &= \\
= 9 &
\end{aligned}$$

$$13-) 2^{359} \div 2^{356} = 2^{359-356} = 2^3 = 8$$

14-) **Opção: (d)  $10^{-3}$**

$$\frac{10^{-3} \cdot 10^5}{10 \cdot 10^4} = \frac{10^2}{10^5} = 10^{-3} = 0,001$$

15-) **Opção: (a) 40**

$$\left(\frac{1}{2}\right)^{-3} + \left(\frac{1}{2}\right)^{-5} = (2)^3 + (2)^5 = 8 + 32 = 40$$

16-)

a)  $25 \div 0,0016 = 5^2 \div 5^{-4} = 5^6 = 15.625$

b)  $625.125 = 5^4 \cdot 5^3 = 5^7 = 78.125$

c)  $5^5 \div 78.125 = 5^5 \div 5^7 = 5^{-2} = 0,04$

d)  $15.625 \times 0,04 \times 0,0016 = 5^6 \times 5^{-2} \times 5^{-4} = 5^0 = 1$

17-) a)  $10.000 = 10^4$

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

c)  $100.000.000 = 10^8$

d)  $10.000.000.000 = 10^{10}$

e)  $0,000001 = 10^{-6}$

f)  $10.000.000 = 10^7$

g)  $\frac{1}{1.000} = 0,001 = 10^{-3}$

h)  $100.000.000.000.000 = 10^{14}$

18-) a)  $7.045.000 = 7,045 \times 10^6$  e  $4.750.000 = 4,75 \times 10^6$

b)  $0,0001 = 1 \times 10^{-4}$

c)  $300.000 = 3 \times 10^5$

d)  $41.000.000.000.000 = 4,1 \times 10^{13}$

$$\text{e) } 0,0000000000000000016 = 1,6 \times 10^{-18}$$

$$\text{f) } 149.600.000 = 1,496 \times 10^8$$

$$\text{g) } 10.000.000.000 = 1 \times 10^{10}$$

**19-)**

$$\text{a) } (3)^{-3} = \left(\frac{1}{3}\right)^3 = \frac{1}{27}$$

$$\text{b) } (-5)^{-1} = -\frac{1}{5}$$

$$\text{c) } (-1,6)^{-2} = \left(-\frac{16}{10}\right)^{-2} = \left(-\frac{10}{16}\right)^2 = \frac{100}{256} = \frac{25}{64}$$

$$\text{d) } \left(\frac{1}{2}\right)^{-5} = 2^5 = 32$$

**20-)**

$$\text{a) } 10^4$$

$$\text{c) } 10^1$$

$$\text{e) } 10^{12}$$

$$\text{b) } 10^{-1}$$

$$\text{d) } 0,0002$$

**21-)**

$$\text{a) } \frac{10^6 \cdot 10^7 \cdot 10^3}{10^4 \cdot 10^8} = \frac{10^{16}}{10^{12}} = 10^4$$

$$\text{b) } (5^4 \cdot 5^3)^6 \div (25^3 \cdot 5^2)^5 = (5^7)^6 \div [(5^2)^3 \cdot 5^2]^5 = 5^{42} \div 5^{40} = 5^2$$

**22-)**

$$\text{a) } m \div n \rightarrow (2^7 \cdot 3^5 \cdot 7^3) \div (2^5 \cdot 3^4 \cdot 7^2) = [(2^7 \div 2^5) \cdot (3^5 \div 3^4) \cdot (7^3 \div 7^2)] = 2^2 \cdot 3 \cdot 7 = 4 \cdot 3 \cdot 7 = 84$$

$$\text{b) } m \div p \rightarrow (2^7 \cdot 3^5 \cdot 7^3) \div (2^6 \cdot 3^3 \cdot 7) = [(2^7 \div 2^6) \cdot (3^5 \div 3^3) \cdot (7^3 \div 7)] = 2 \cdot 3^2 \cdot 7^2 = 2 \cdot 9 \cdot 49 = 882$$

$$\text{c) } p \div m \rightarrow (2^6 \cdot 3^3 \cdot 7) \div (2^7 \cdot 3^5 \cdot 7^3) = [(2^6 \div 2^7) \cdot (3^3 \div 3^5) \cdot (7 \div 7^3)] = 2^{-1} \cdot 3^{-2} \cdot 7^{-2} =$$

$$= \left(\frac{1}{2}\right) \cdot \left(\frac{1}{9}\right) \cdot \left(\frac{1}{49}\right) = \frac{1}{882}$$