Gabarito – 1

1. $(2^3) \ . (2^2)$
   $= 2^{3+2}$
   $= 2^5$
   $= 32$
2. $(5^4) \div (5^2)$
   $= 5^{4-2}$
   $= 5^2$
   $= 25$
3. $(6^2) \cdot (6^3)$
   $= 6^{2+3}$
   $= 6^5$
   $= 7776$
4. $(3^5) \div (3^2)$
   $= 3^{5-2}$
   $= 3^3$
   $= 27$
5. $(2^6) \div (2^3)$
   $= 2^{6-3}$
   $= 2^3$
   $= 8$
6. $(3^2)^3$
   $= 3^{2 \cdot 3}$
   $= 3^6$
   $= 729$
7. $(2^3)^2$
   $= 2^{3 \cdot 2}$
   $= 2^6$
   $= 64$
8. $(5^2)^2$
   $= 5^{2 \cdot 2}$
   $= 5^4$
   $= 625$
9. $(4^1)^3$
   $= 4^{1 \cdot 3}$
   $= 4^3$
   $= 64$
10. $(2^2)^4$
    $= 2^{2 \cdot 4}$
    $= 2^8$
    $= 256$
11. $[2^2 \cdot 3]^2$
    $= [4 \cdot 3]^2$
    $= 12^2$
    $= 144$
12. $[4 \cdot (2^2)]^2$
    $= [4 \cdot 4]^2$
    $= 16^2$

$= 256$

13. $[3 \cdot (3^2)]^2$
$= [3 \cdot 9]^2$
$= 27^2$
$= 729$
14. $[(2^2) \cdot (2^3)] \div 2^4$
$= 2^{2+3} \div 2^4$
$= 2^5 \div 2^4$
$= 2^{5-4}$
$= 2$
15. $[(2^3) \cdot (5^3)] \div 10^2$
$= (8 \cdot 125) \div 100$
$= 1000 \div 100$
$= 10$
16. $(7^0) \cdot 5$
$= 1 \cdot 5$
$= 5$
17. $(8^0) + (5^0)$
$= 1 + 1$
$= 2$
18. $(2^0) \cdot (7^2)$
$= 1 \cdot 49$
$= 49$
19. $(3^3) \cdot (3^0)$
$= 27 \cdot 1$
$= 27$
20. $(9^0) \cdot (4^2)$
$= 1 \cdot 16$
$= 16$
21. $(2^4) \div (2^6)$
$= 2^{4-6}$
$= 2^{-2}$
$= \frac{1}{2^2}$
$= \frac{1}{4}$
22. $(5^3) \cdot (5^{-1})$
$= 5^{3-1}$
$= 5^2$
$= 25$
23. $(4^5) \div (4^7)$
$= 4^{5-7}$
$= 4^{-2}$
$= \frac{1}{4^2}$
$= \frac{1}{16}$
24. $(10^3) \div (10^5)$
$= 10^{3-5}$

$= 10^{-2}$

$= \frac{1}{10^2}$

$= \frac{1}{100}$

25. $(2^{-2}) \cdot (2^5)$

$= 2^{-2+5}$

$= 2^3$

$= 8$

26. $(10^2) \div (10)$

$= 10^2 \div 10^1$

$= 10^{2-1}$

$= 10$

27. $(9^2) \div (3^2)$

$= \left(\frac{9}{3}\right)^2$

$= 3^2$

$= 9$

28. $(12^2) \div (6^2)$

$= \left(\frac{12}{6}\right)^2$

$= 2^2$

$= 4$

29. $(8^2) \div (2^2)$

$= \left(\frac{8}{2}\right)^2$

$= 4^2$

$= 16$

30. $[(6^2) \div 6]^2$

$= [36 \div 6]^2$

$= 6^2$

$= 36$

Gabarito – 2

1. $[(8 + 4) \div 2] + 3$

$12 \div 2 + 3$

$6 + 3 = 9$

2. $[5 + 3^2] \cdot 2$

$[5 + 9] \cdot 2$

$14 \cdot 2 = 28$

3. $(6^2 \div 3) + 1$

$36 \div 3 + 1$

$12 + 1 = 13$

4. $[8 + 2^3] \div 4$

$[8 + 8] \div 4$

$16 \div 4 = 4$

5. $(10 - 2^2) + 5$
   $(10 - 4) + 5$
   $6 + 5 = 11$
6. $(3^3 - 7) + 2$
   $(27 - 7) + 2$
   $20 + 2 = 22$
7. $4 \cdot (2^2 + 1)$
   $4 \cdot (4 + 1)$
   $4 \cdot 5 = 20$
8. $(18 \div 3^2) + 6$
   $(18 \div 9) + 6$
   $2 + 6 = 8$
9. $7 + (5^2 - 10)$
   $7 + (25 - 10)$
   $7 + 15 = 22$
10. $(2^4 \div 4) + 9$
    $(16 \div 4) + 9$
    $4 + 9 = 13$
11. $[3 + 2^3]^2$
    $[3 + 8]^2$
    $11^2 = 121$
12. $(12 \div 2) + 2^2$
    $6 + 4 = 10$
13. $9 - (3^2 - 1)$
    $9 - (9 - 1)$
    $9 - 8 = 1$
14. $(5^2 \div 5) + 8$
    $(25 \div 5) + 8$
    $5 + 8 = 13$
15. $6 + (2 \cdot 3^2)$
    $6 + (2 \cdot 9)$
    $6 + 18 = 24$
16. $(16 \div 2^2) + 7$
    $(16 \div 4) + 7$
    $4 + 7 = 11$
17. $10 + (2^3 \div 2)$
    $10 + (8 \div 2)$
    $10 + 4 = 14$
18. $(4^2 + 6) \div 2$
    $(16 + 6) \div 2$
    $22 \div 2 = 11$
19. $[15 - 3^2] + 4$
    $[15 - 9] + 4$
    $6 + 4 = 10$
20. $(2^5 \div 8) + 3$
    $(32 \div 8) + 3$
    $4 + 3 = 7$
21. $[(2^3 + 4^2) \div 4] + 3^2$
    $[(8 + 16) \div 4] + 9$

$24 \div 4 + 9$
$6 + 9 = 15$

22. $[18 - (2^3 + 3)] + [2^2 \cdot 3]$
$[18 - (8 + 3)] + [4 \cdot 3]$
$[18 - 11] + 12$
$7 + 12 = 19$
23. $[(5^2 - 9) \cdot 2] + 2^3$
$[(25 - 9) \cdot 2] + 8$
$16 \cdot 2 + 8$
$32 + 8 = 40$
24. $[24 \div (2^2 + 2)] + 3^3$
$[24 \div (4 + 2)] + 27$
$24 \div 6 + 27$
$4 + 27 = 31$
25. $[(4^2 + 2^3) \div 2] + [3^2 - 1]$
$[(16 + 8) \div 2] + [9 - 1]$
$24 \div 2 + 8$
$12 + 8 = 20$
26. $[30 - (3^2 + 5)] \cdot 2$
$[30 - (9 + 5)] \cdot 2$
$[30 - 14] \cdot 2$
$16 \cdot 2 = 32$
27. $[(2^5 \div 4) + (5^2 \div 5)] \cdot 2$
$[(32 \div 4) + (25 \div 5)] \cdot 2$
$[8 + 5] \cdot 2$
$13 \cdot 2 = 26$
28. $[40 \div (2^3 + 2)] + [(3^2) \cdot 2]$
$[40 \div (8 + 2)] + [9 \cdot 2]$
$40 \div 10 + 18$
$4 + 18 = 22$
29. $[(6^2 - 20) \div 4] + [(2^3 + 1)]$
$[(36 - 20) \div 4] + [8 + 1]$
$16 \div 4 + 9$
$4 + 9 = 13$
30. $[(3^3 + 5^2) \div 4] + [(2^4 \div 2)]$
$[(27 + 25) \div 4] + [16 \div 2]$
$52 \div 4 + 8$
$13 + 8 = 21$

Gabarito 3

1) Calcule as potências

a) $2^3 = 8$
b) $5^2 = 25$
c) $10^3 = 1000$
d) $4^3 = 64$
e) $6^2 = 36$
f) $3^4 = 81$

g) $7^2 = 49$
h) $8^2 = 64$
i) $9^3 = 729$
j) $2^5 = 32$

2) Potências com bases negativas

a) $(-2)^3 = -8$
b) $(-3)^2 = 9$
c) $(-4)^3 = -64$
d) $(-5)^2 = 25$
e) $(-2)^4 = 16$

3) Expoente negativo

a) $4^{-2} = \frac{1}{16}$
b) $4^{-3} = \frac{1}{64}$
c) $5^{-1} = \frac{1}{5}$
d) $3^{-3} = \frac{1}{27}$
e) $10^{-2} = \frac{1}{100}$
f) $10^{-3} = \frac{1}{1000}$
g) $2^{-5} = \frac{1}{32}$
h) $7^{-1} = \frac{1}{7}$
i) $1^{-18} = 1$

4) Propriedades da potência

a) $2^3 \cdot 2^4 = 2^7 = 128$

b) $5^2 \cdot 5^3 = 5^5 = 3125$

c) $10^5 \div 10^2 = 10^3 = 1000$

d) $3^6 \div 3^2 = 3^4 = 81$

e) $(2^3)^2 = 2^6 = 64$

f) $(5^2)^3 = 5^6 = 15625$

g) $4^3 \cdot 4^2 = 4^5 = 1024$

h) $6^5 \div 6^3 = 6^2 = 36$

i) $(3^2)^4 = 3^8 = 6561$

j) $7^3 \cdot 7^0 = 7^3 = 343$

k) $(2 \cdot 3)^2 = 6^2 = 36$

l) $(4 \cdot 5)^2 = 20^2 = 400$

m) $(6 \cdot 2)^3 = 12^3 = 1728$

n) $(10 \div 2)^2 = 5^2 = 25$

o) $(12 \div 3)^3 = 4^3 = 64$

5) Potências de base 10

a) $10^2 = 100$

b) $10^4 = 10000$

c) $10^0 = 1$

d) $10^{-1} = \frac{1}{10}$

e) $10^{-2} = \frac{1}{100}$

f) $10^{-4} = \frac{1}{10000}$

6) Problemas

a)
A bactéria dobra a cada hora:

$2^5 = 32$

Resposta: **32 bactérias**

b)
$x^2 = 81$

$x = 9$ou $x = -9$

Resposta: **9 ou -9**

c)
Lado:

$3^2 = 9$

Área do quadrado:

$9^2 = 81$

Resposta: **81 m²**

7) Potenciação de frações

a) $\left(\frac{2}{3}\right)^2 = \frac{4}{9}$

b) $\left(\frac{4}{7}\right)^2 = \frac{16}{49}$

c) $\left(\frac{7}{5}\right)^2 = \frac{49}{25}$

d) $\left(\frac{1}{3}\right)^2 = \frac{1}{9}$

e) $\left(\frac{5}{3}\right)^2 = \frac{25}{9}$

f) $\left(\frac{7}{30}\right)^0 = 1$

g) $\left(\frac{9}{5}\right)^1 = \frac{9}{5}$

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

i) $\left(\frac{1}{5}\right)^3 = \frac{1}{125}$

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

k) $\left(\frac{2}{3}\right)^4 = \frac{16}{81}$

l) $\left(\frac{2}{5}\right)^1 = \frac{2}{5}$

m) $\left(\frac{3}{11}\right)^2 = \frac{9}{121}$

n) $\left(\frac{9}{4}\right)^0 = 1$

o) $\left(\frac{12}{13}\right)^2$

$$\left(\frac{12}{13}\right)^2 = \frac{12^2}{13^2}$$
$$= \frac{144}{169}$$

8) Resolva as expressões numéricas

a)

$2 + 8 - 3 - 5 + 15$

$10 - 3 - 5 + 15$

$7 - 5 + 15$

$2 + 15 = 17$

b)

$12 + [35 - (10 + 2) + 2]$

$12 + [35 - 12 + 2]$

$12 + [23 + 2]$

$12 + 25 = 37$

c)

$[(18 + 3 \cdot 2) \div 8 + 5 \cdot 3] \div 6$

$[(18 + 6) \div 8 + 15] \div 6$

$[24 \div 8 + 15] \div 6$

$[3 + 15] \div 6$

$18 \div 6 = 3$

d)

$37 + [-25 - (-11 + 19 - 4)]$

$37 + [-25 - (8 - 4)]$

$37 + [-25 - 4]$

$37 + (-29)$

$= 8$

e)

$60 \div \{2 \cdot [-7 + 18 \div (-3 + 12)]\} - [7 \cdot (-3) - 18 \div (-2) + 1]$

$60 \div \{2 \cdot [-7 + 18 \div 9]\} - [-21 - (-9) + 1]$

$60 \div \{2 \cdot [-7 + 2]\} - [-21 + 9 + 1]$

$60 \div \{2 \cdot (-5)\} - [-11]$

$60 \div (-10) + 11$

$-6 + 11 = 5$

f)

$-8 + \{-5 + [(8 - 12) + (13 + 12)] - 10\}$

$-8 + \{-5 + [(-4) + 25] - 10\}$

$-8 + \{-5 + 21 - 10\}$

$-8 + 6 = -2$

g)

$3 - \{2 + (11 - 15) - [5 + (-3 + 1)] + 8\}$

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

$3 - \{2 - 4 - 3 + 8\}$

$3 - \{3\}$

$= 0$

h)

$[-1 + (2^2 - 5 \cdot 6)] \div (-5 + 2) + 1$

$[-1 + (4 - 30)] \div (-3) + 1$

$[-1 - 26] \div (-3) + 1$

$-27 \div (-3) + 1$

$9 + 1 = 10$

i)

$\left[\sqrt{100} - (2^4 - 8) \cdot 2 - 24\right] \div \left[2^2 - (-3 + 2)\right]$

$[10 - (16 - 8) \cdot 2 - 24] \div [4 - (-1)]$

$[10 - 8 \cdot 2 - 24] \div 5$

$[10 - 16 - 24] \div 5$

$-30 \div 5 = -6$

j)

$\{[(8 \cdot 4 + 3) \div 7 + (3 + 15 \div 5) \cdot 3] \cdot 2 - (19 - 7) \div 6\} \cdot 2 + 12$

$\{[(32 + 3) \div 7 + (3 + 3) \cdot 3] \cdot 2 - 12 \div 6\} \cdot 2 + 12$

$\{[35 \div 7 + 6 \cdot 3] \cdot 2 - 2\} \cdot 2 + 12$

$\{[5 + 18] \cdot 2 - 2\} \cdot 2 + 12$

$\{23 \cdot 2 - 2\} \cdot 2 + 12$

$\{46 - 2\} \cdot 2 + 12$

$44 \cdot 2 + 12$

$88 + 12 = 100$

9) Calcule o valor das expressões

1)

$\frac{4}{5} \cdot (3 + 0{,}4) - 3{,}21$

$\frac{4}{5} \cdot 3{,}4 - 3{,}21$

$2{,}72 - 3{,}21 = -0{,}49$

2)

$$\frac{4}{3}+\frac{7}{5}\cdot\left(\frac{1}{2}+\frac{4}{9}\right)-\frac{1}{5}$$

$$\frac{4}{3}+\frac{7}{5}\cdot\frac{17}{18}-\frac{1}{5}$$

$$\frac{4}{3}+\frac{119}{90}-\frac{1}{5}$$

$$\frac{120}{90}+\frac{119}{90}-\frac{18}{90}$$

$$\frac{221}{90}$$

3)

$$\frac{\frac{4}{5}\cdot\left(\frac{7}{3}-1\right)}{\frac{2}{9}-3}$$

$$\frac{\frac{4}{5}\cdot\frac{4}{3}}{\frac{2}{9}-\frac{27}{9}}$$

$$\frac{\frac{16}{15}}{-\frac{25}{9}}$$

$$\frac{16}{15}\cdot\frac{9}{-25}$$

$$\frac{144}{-375}$$

$$-\frac{48}{125}$$

Gabarito 4

1) Reduza a uma só potência

a) $(2^{15}):(2^{10})$

$2^{15-10}=2^{5}$

b) $3\cdot 3^{2}$

$3^{1}\cdot 3^{2}=3^{3}$

c) $[(-5)^{6}]:[(-5)^{4}]$

$(-5)^{6-4} = (-5)^2$

d) $[(-7)^8]:[(-7)^2]$

$(-7)^{8-2} = (-7)^6$

e) $(2^{10}):(2^3)$

$2^{10-3} = 2^7$

f) $(-3)^2 \cdot (-3)^3$

$(-3)^{2+3} = (-3)^5$

g) $[(-2)^6] \cdot (-2)$

$(-2)^6 \cdot (-2)^1 = (-2)^7$

h) $3^{-6}:3^2$

$3^{-6-2} = 3^{-8}$

i) $2^8 \cdot 2^{-9}$

$2^{8-9} = 2^{-1}$

j) $5^3:5^4$

$5^{3-4} = 5^{-1}$

2) Potenciações com expoentes negativos

a) 4^{-2}

$= \frac{1}{4^2} = \frac{1}{16}$

b) $(-3)^{-1}$

$= \frac{1}{-3} = -\frac{1}{3}$

c) $(-5)^{-2}$

$= \frac{1}{(-5)^2} = \frac{1}{25}$

d)

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

$\frac{1}{\frac{9}{16}}$

$1 \cdot \frac{16}{9}$
$= \frac{16}{9}$
e) $\left(1\frac{1}{2}\right)^{-3}$

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

3) Calcule as potências

a) $\left(-\frac{1}{3}\right)^4 =$

$= \frac{(-1)^4}{3^4}$
$= \frac{1}{81}$

b) $(0{,}2)^3$

$0{,}2 \cdot 0{,}2 \cdot 0{,}2 = 0{,}008$

c) $(-\frac{3}{5})^0 =$
$= 1$

d) $(-1)^5$
$= -1$

e) $(-\frac{1}{2})^4 =$
$= \frac{1}{16}$

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

$= \frac{8}{27}$

g) $(-0{,}5)^1$

$= -0{,}5$

h) $(0{,}03)^3$

$0{,}03 \cdot 0{,}03 \cdot 0{,}03 = 0{,}000027$

4) Determine o valor das expressões

a) $(-8) : (-8)$

$= 1$

b) $25 : (-5)$

$= -5$

c) $(-4)^2 + 16 - (-1)$

$16 + 16 + 1 = 33$

d) $-8 \cdot 9 - (-10) \cdot 1$

$-72 - (-10) = -72 + 10 = -62$

e) $36:9-(-1)\cdot(-8)$

$4-8=-4$

f) $\{[16+3(9-1)]:[-8+3\cdot 4]\}$

$\{[16+3\cdot 8]:[-8+12]\}$
$\{[16+24]:4\}$
$40:4=10$

g) $(-\frac{2}{3})^3+1=$

$-\frac{8}{27}+1$
$=\frac{-8+27}{27}=\frac{19}{27}$

h) $(-8)-1+9-(-32)$

$-9+9+32=32$

i) $16+3^5$

$16+243=259$

j) 5^3-2^5

$125-32=93$

k) 1^3+14+1

$1+14+1=16$

l) $216-49-(10)^{14}:(10)^{12}$

$216-49-10^2$
$216-49-100$
67

m)

$$\frac{(3^4 \cdot 3^{-2})}{3^2} + \frac{2^5}{2^3} - (-3)^2 + \left(\frac{1}{3}\right)^{-2}$$
$$\frac{3^{4-2}}{3^2} + 2^{5-3} - 9 + 3^2$$
$$\frac{3^2}{3^2} + 4 - 9 + 9$$
$$1 + 4 - 9 + 9 = 5$$

n)

$$\left(\frac{4^3}{4^5}\right) \cdot 4^2 + (-2)^4 - \frac{3^5}{3^2} + \left(\frac{1}{2}\right)^{-3}$$
$$4^{3-5} \cdot 4^2 + 16 - 3^{5-2} + 2^3$$
$$4^{-2} \cdot 4^2 + 16 - 27 + 8$$
$$1 + 16 - 27 + 8 = -2$$

5)

$$x^4 - 3x^2y^2 - y^3$$

com $x = -2$e $y = -3$

$$(-2)^4 - 3(-2)^2(-3)^2 - (-3)^3$$
$$16 - 3 \cdot 4 \cdot 9 - (-27)$$
$$16 - 108 + 27$$
$$-65$$

6)

Metade do bolo:

$$\frac{1}{2}$$

Um terço do bolo:

$$\frac{1}{3}$$

Diferença:

$$\frac{1}{2} - \frac{1}{3} = \frac{3-2}{6} = \frac{1}{6}$$

Metade da diferença:

$$\frac{1}{6} \div 2 = \frac{1}{12}$$

Resposta: $\boxed{\frac{1}{12}}$

7)

$$y = \frac{3^8 \cdot 9^{-2} \cdot 27^{-1}}{81}$$

Transformando:

$9^{-2} = (3^2)^{-2} = 3^{-4}$
$27^{-1} = (3^3)^{-1} = 3^{-3}$
$81 = 3^4$

Então:

$$y = \frac{3^8 \cdot 3^{-4} \cdot 3^{-3}}{3^4}$$
$= 3^{8-4-3-4}$
$= 3^{-3}$

Resposta: $\boxed{3^{-3}}$

8)

$$y = \frac{2^{12} \cdot 4^{-2} \cdot 8^{-1}}{16}$$

Transformando:

$4^{-2} = (2^2)^{-2} = 2^{-4}$
$8^{-1} = (2^3)^{-1} = 2^{-3}$
$16 = 2^4$

Então:

$$y = \frac{2^{12} \cdot 2^{-4} \cdot 2^{-3}}{2^4}$$
$$= 2^{12-4-3-4}$$
$$= 2^1$$

Resposta: $\boxed{2}$

9)

a)

$$\sqrt{62 + \sqrt{2 + \sqrt{3 + \sqrt{1}}}}$$
$$\sqrt{1} = 1$$
$$\sqrt{3+1} = \sqrt{4} = 2$$
$$\sqrt{2+2} = \sqrt{4} = 2$$
$$\sqrt{62+2} = \sqrt{64} = 8$$

b)

$$\sqrt{79 + \sqrt{2 + \sqrt{3 + \sqrt{1}}}}$$
$$\sqrt{1} = 1$$
$$\sqrt{3+1} = 2$$
$$\sqrt{2+2} = 2$$
$$\sqrt{79+2} = \sqrt{81} = 9$$

Gabarito 5

1)

Encontrando P

$$P \cdot (+4) = (-8) \cdot (-9)$$

Primeiro:

$$(-8) \cdot (-9) = 72$$

Então:

$4P = 72$
$P = \frac{72}{4} = 18$

Encontrando A

$A \cdot [(+8) - (+7)] = -5$

Dentro do colchete:

$8 - 7 = 1$

Então:

$A \cdot 1 = -5$
$A = -5$

Encontrando Z

$5 \cdot (Z - 7) = -40$
$Z - 7 = \frac{-40}{5}$
$Z - 7 = -8$
$Z = -1$

Calculando

$(P + A + Z) + P - A - Z$

Substituindo:

$(18 + (-5) + (-1)) + 18 - (-5) - (-1)$

Primeiro parêntese:

$18 - 5 - 1 = 12$

Depois:

$12 + 18 + 5 + 1$
$= 36$

Resposta: $\boxed{36}$

2)

Temos:

$T = (-1) \cdot [(-2) - (-4)]$

Dentro do colchete:

$-2 + 4 = 2$

Então:

$T = (-1) \cdot 2 = -2$

Agora V:

$V = 6 + [(-3) \cdot (+3)]$
$(-3) \cdot (+3) = -9$
$V = 6 + (-9) = -3$

Calculando:

$(2T - 3V) : 5$

Substituindo:

$[2(-2) - 3(-3)] \div 5$
$(-4) - (-9)$
$-4 + 9 = 5$
$5 \div 5 = 1$

Resposta: $\boxed{1}$

3A)

$\sqrt{0{,}444\ldots} \cdot \frac{3}{4} - 4 + 0{,}25$

Sabemos:

$0{,}444\ldots = \frac{4}{9}$

Então:

$\sqrt{\frac{4}{9}} = \frac{2}{3}$

Agora:

$\frac{2}{3} \cdot \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$
$\frac{1}{2} - 4 + 0{,}25$
$0{,}5 - 4 + 0{,}25$
$-3{,}25$

Resposta: $\boxed{-3{,}25}$

3B)

$(1{,}444\ldots + 0{,}5) : \frac{7}{10}$

Sabemos:

$1{,}444\ldots = \frac{13}{9}$

e

$0{,}5 = \frac{1}{2}$

Somando:

$$\frac{13}{9}+\frac{1}{2}$$

MMC = 18

$$\frac{26}{18}+\frac{9}{18}=\frac{35}{18}$$
Agora dividir por:
$$\frac{7}{10}$$
$$\frac{35}{18}\div\frac{7}{10}$$

Multiplica pelo inverso:

$$\frac{35}{18}\cdot\frac{10}{7}$$

Simplificando:

$$35\div 7=5$$
$$\frac{5\cdot 10}{18}=\frac{50}{18}=\frac{25}{9}$$

Resposta: $\boxed{\frac{25}{9}}$

3C)

$$\frac{0{,}888\ldots-(-3)^{-2}}{(-1)^3+0{,}888\ldots}$$

Sabemos:

$$0{,}888\ldots=\frac{8}{9}$$

e:

$$\left(-3\right)^{-2}=\frac{1}{(-3)^2}=\frac{1}{9}$$

Numerador:

$$\frac{8}{9}-\frac{1}{9}=\frac{7}{9}$$

Denominador:

$$(-1)^3=-1$$
$$-1+\frac{8}{9}$$
$$-\frac{9}{9}+\frac{8}{9}=-\frac{1}{9}$$

Então:

$$\frac{7/9}{-1/9}$$
$$\frac{7}{9}\cdot\frac{9}{-1}=-7$$

Resposta: $\boxed{-7}$

3D)

$$\left(2{,}333\ldots\right)^{-2}+\frac{(3)^{14}}{27^3}$$

Sabemos:

$$2{,}333\ldots=\frac{7}{3}$$

Então:

$$\left(\frac{7}{3}\right)^{-2}=\left(\frac{3}{7}\right)^{2}=\frac{9}{49}$$

Agora:

$$27^3=(3^3)^3=3^9$$
$$\frac{3^{14}}{3^9}=3^5=243$$

Somando:

$$243 + \frac{9}{49}$$
$$= \frac{11907 + 9}{49}$$
$$= \frac{11916}{49}$$

Resposta: $\boxed{\frac{11916}{49}}$

3E)

$$\frac{0{,}555\ldots - \sqrt{0{,}25}}{\left(\frac{2}{3}\right)^2 \cdot 10^{-1}}$$

Sabemos:

$$0{,}555\ldots = \frac{5}{9}$$

e:

$$\sqrt{0{,}25} = 0{,}5 = \frac{1}{2}$$

Numerador:

$$\frac{5}{9} - \frac{1}{2}$$

MMC = 18

$$\frac{10}{18} - \frac{9}{18} = \frac{1}{18}$$

Denominador:

$$\left(\frac{2}{3}\right)^2 = \frac{4}{9}$$
$$10^{-1} = \frac{1}{10}$$
$$\frac{4}{9} \cdot \frac{1}{10} = \frac{4}{90} = \frac{2}{45}$$

Agora:

$$\frac{1/18}{2/45}$$
$$\frac{1}{18} \cdot \frac{45}{2}$$
$$= \frac{45}{36} = \frac{5}{4}$$

Resposta: $\boxed{\frac{5}{4}}$

3F)

$$\frac{0{,}333\ldots + \frac{5^0}{4} + \frac{2}{3}}{\frac{1}{2} + 2^{-1} + 2^3}$$

Sabemos:

$$0{,}333\ldots = \frac{1}{3}$$
$$5^0 = 1$$

Então:

$$\frac{1}{4}$$

Numerador:

$$\frac{1}{3} + \frac{1}{4} + \frac{2}{3}$$
$$\frac{1}{3} + \frac{2}{3} = 1$$
$$1 + \frac{1}{4} = \frac{5}{4}$$

Denominador:

$$2^{-1} = \frac{1}{2}$$
$$\frac{1}{2} + \frac{1}{2} + 8$$
$$1 + 8 = 9$$

Então:

$$\frac{5/4}{9} = \frac{5}{36}$$

Resposta: $\boxed{\frac{5}{36}}$

3G)

$$0{,}11 + \frac{1}{5} + 1{,}222\ldots$$

Sabemos:

$$0{,}11 = \frac{11}{100}$$
$$1{,}222\ldots = \frac{11}{9}$$

Então:

$$\frac{11}{100} + \frac{1}{5} + \frac{11}{9}$$

MMC = 900

$$\frac{99}{900} + \frac{180}{900} + \frac{1100}{900}$$
$$= \frac{1379}{900}$$

Resposta: $\boxed{\frac{1379}{900}}$