COLÉGIO PEDRO II — CAMPUS: REALENGO II – 2026
MATEMÁTICA – 1ª SÉRIE DO ENSINO MÉDIO
LISTA REVISÃO DO ENSINO FUNDAMENTAL II
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ALUNO : _____ TURMA : _____

1) ***BATERIA DE EXERCICIOS Nº 1 – FRAÇÕES E DECIMAIS (4 OPERAÇÕES)***

1.1) $\underset{1/3}{1} + \underset{3/1}{\frac{2}{3}} = \frac{3}{3} + \frac{2}{3} = \frac{5}{3}$

1.2) $\underset{1/5}{2} - \underset{5/1}{\frac{1}{5}} = \frac{10}{5} - \frac{1}{5} = \frac{9}{5}$

1.3) $\underset{2/3}{\frac{1}{2}} + \underset{3/2}{\frac{2}{3}} = \frac{3}{6} + \frac{4}{6} = \frac{7}{6}$

1.4) $\frac{1}{4} + 2 - (-1)^2 = \frac{1}{4} + 2 - 1 = \underset{1/1}{\frac{1}{4}} + \underset{1/4}{1} = \frac{1}{4} + \frac{4}{4} = \frac{5}{4}$

1.5) $\underset{1/1}{\frac{3}{4}} + \underset{2/2}{\frac{1}{2}} - \underset{1/4}{3} = \frac{3}{4} + \frac{2}{4} - \frac{12}{4} = \frac{5}{4} - \frac{12}{4} = -\frac{7}{4}$

1.6) $\frac{1}{2} \cdot \frac{3}{5} = \frac{3}{10}$

1.7) $\underset{1}{2} \cdot \frac{1}{3} = \frac{2}{3}$

1.8) $\underset{1}{2} \cdot \frac{1}{5} \cdot \frac{2}{3} = \frac{4}{15}$

1.9) $\frac{3}{2} \cdot \frac{2}{5} \cdot \frac{1}{8} = \frac{6}{80} \overset{\div 2}{\underset{\div 2}{=}} \frac{3}{40}$

1.10) $\frac{3}{4} + \underset{1}{7} \cdot \frac{1}{2} = \underset{1/1}{\frac{3}{4}} + \underset{2/2}{\frac{7}{2}} = \frac{3}{4} + \frac{14}{4} = \frac{17}{4}$

1.11) $\frac{1}{4} - \underset{1}{3} \cdot \frac{1}{2} + 2 = \underset{1/1}{\frac{1}{4}} - \underset{2/2}{\frac{3}{2}} + \underset{1/4}{\frac{2}{1}} = \frac{1}{4} - \frac{6}{4} + \frac{8}{4} = \frac{3}{4}$

1.12) $\frac{3}{5} \div \frac{4}{3} = \frac{3}{5} \cdot \frac{3}{4} = \frac{9}{20}$

1.13) $4 \div \frac{5}{9} = \underset{1}{\frac{4}{1}} \cdot \frac{9}{5} = \frac{36}{5}$

1.14) $\dfrac{5-\frac{1}{4}}{\frac{9}{2}} = \dfrac{\frac{5}{1}-\frac{1}{4}}{\frac{9}{2}} = \dfrac{\frac{20}{4}-\frac{1}{4}}{\frac{9}{2}} = \dfrac{\frac{19}{4}}{\frac{9}{2}} = \dfrac{19}{4}\cdot\dfrac{2}{9} = \dfrac{38}{36} = \dfrac{19}{18}$

1.15) $\dfrac{0{,}5-\frac{3}{4}}{\frac{3}{2}}$

OBS: $0{,}5 = \dfrac{5}{10} = \dfrac{1}{2}$

$\dfrac{\frac{1}{2}-\frac{3}{4}}{\frac{3}{2}} = \dfrac{\frac{2}{4}-\frac{3}{4}}{\frac{3}{2}} = \dfrac{-\frac{1}{4}}{\frac{3}{2}} = -\dfrac{1}{4}\cdot\dfrac{2}{3} = -\dfrac{2}{12} = -\dfrac{1}{6}$

1.16) $0{,}8 + 6{,}15 = 6{,}95$

$$\begin{array}{r} 0{,}80 \\ +\ 6{,}15 \\ \hline 6{,}95 \end{array}$$

1.17) $9{,}3 + 0{,}11 = 9{,}41$

$$\begin{array}{r} 9{,}30 \\ +\ 0{,}11 \\ \hline 9{,}41 \end{array}$$

1.18) $12{,}4 - 6 = 6{,}4$

$$\begin{array}{r} 12{,}4 \\ -\ 6{,}0 \\ \hline 6{,}4 \end{array}$$

1.19) $20{,}5 - 7{,}8 = 12{,}7$

$$\begin{array}{r} {\scriptstyle 1}\ {\scriptstyle 9}\ \ {\scriptstyle 15} \\ 20{,}5 \\ -\ 7{,}8 \\ \hline 12{,}7 \end{array}$$

1.20) $0{,}5 - 0{,}27 = 0{,}23$

$$\begin{array}{r} {\scriptstyle 4}\ \ {\scriptstyle 10} \\ 0{,}50 \\ -\ 0{,}27 \\ \hline 0{,}23 \end{array}$$

1.21) $14 - 6{,}22 = 7{,}78$

$$\begin{array}{r} {\scriptstyle 0}\ {\scriptstyle 13}\ {\scriptstyle 9}\ {\scriptstyle 10} \\ 14{,}00 \\ -\ 6{,}22 \\ \hline 7{,}78 \end{array}$$

1.22) $2 \times 3{,}2 = 6{,}4$

$$\begin{array}{r} 3{,}2 \\ \times\ 2 \\ \hline 6{,}4 \end{array}$$

1.23) $3 \times 2{,}5 = 7{,}5$

$$\begin{array}{r} {\scriptstyle 1} \\ 2{,}5 \\ \times\ 3 \\ \hline 7{,}5 \end{array}$$

1.24) $4{,}3 \times 5 = 21{,}5$

$$\begin{array}{r} {\scriptstyle 1} \\ 4{,}3 \\ \times\ 5 \\ \hline 21{,}5 \end{array}$$

1.25) $1{,}8 \times 2{,}5 = 4{,}5$

$$\begin{array}{r} {\scriptstyle 1} \\ 1{,}8 \\ \times\ 2{,}5 \\ \hline 90 \\ +\ {\scriptstyle 1}\ 36 \\ \hline 4{,}50 \end{array}$$

1.26) $4 \div 2{,}5 = 1{,}6$

$$\begin{array}{r|l} 40 & 2{,}5 \\ 150 & \hline 1{,}6 \\ 0 & \end{array}$$

1.27) $2{,}1 \div 3 = 0{,}7$

$$\begin{array}{r|l} 2{,}10 & 30 \\ 0 & \hline 0{,}7 \end{array}$$

1.28) 2,1 ÷ 0,3 = 7

2,1 | 0,3
0 | 7

1.29) 2,1 ÷ 0,03 = 70

2,10 | 0,03
00 | 70
0

1.30) 1,3 ÷ 0,02 = 65

1,30 | 0,02
10 | 65
0

2) **BATERIA DE EXERCICIOS Nº 2 – FRAÇÕES E DECIMAIS (POTÊNCIAS E RAÍZES)**

2.1) $(0,7)^2 = 0,7 \times 0,7 = 0,49$

$$\begin{array}{r} 0,7 \\ \times\ 0,7 \\ \hline 49 \\ +\ 00 \\ \hline 0,49 \end{array}$$

2.2) $(0,3)^2 = 0,3 \times 0,3 = 0,09$

$$\begin{array}{r} 0,3 \\ \times 0,3 \\ \hline 09 \\ +\ 00 \\ \hline 0,09 \end{array}$$

2.3) $(1,2)^2 = 1,2 \times 1,2 = 1,44$

$$\begin{array}{r} 1,2 \\ \times 1,2 \\ \hline 24 \\ +\ 12 \\ \hline 1,44 \end{array}$$

2.4) $(2,5)^2 = 2,5 \times 2,5 = 6,25$

2.5) $(0,3)^3 = 0,3 \times 0,3 \times 0,3 = 0,027$ (0,09)

$$\begin{array}{r} 0,09 \\ \times\ 0,3 \\ \hline 027 \\ +\ 000 \\ \hline 0,027 \end{array}$$

2.6) $(1,1)^2 = 1,1 \times 1,1 = 1,21$

2.7) $(0,15)^2 = 0,15 \times 0,15 = 0,0225$

$$\begin{array}{r} 0,15 \leftarrow \text{2 CASAS} \\ \times 0,15 \leftarrow \text{2 CASAS} \\ \hline 075 \\ 015 \\ \hline 0,0225 \leftarrow \text{4 CASAS} \end{array}$$

2.8) $(0,2)^4 = 0,2 \times 0,2 \times 0,2 \times 0,2 = 0,0016$ (0,04; 0,008)

2.9) $(1,2)^2 + 1,3 = 1,44 + 1,3 = 2,74$

2.10) $20 - (0,6)^2 = 20 - 0,36 = 19,64$

$$\begin{array}{r} 20,00 \\ -\ 0,36 \\ \hline 19,64 \end{array}$$

2.11) $(0,2)^2 + (0,8)^2 = 0,04 + 0,64 = 0,68$

2.12) $(1,5)^2 - (0,3)^2 = 2,25 - 0,09 = 2,16$

$$\begin{array}{r} 2,25 \\ -\ 0,09 \\ \hline 2,16 \end{array}$$

2.13) $(0,2)^3 + (0,4)^2 = 0,008 + 0,16 = 0,168$

2.14) $1-(0,9)^2 = 1-0,81 = 0,19$

$$\begin{array}{r} 1,00 \\ -\ 0,81 \\ \hline 0,19 \end{array}$$

2.15) $100 \times (0,1)^4 = 100 \times 0,0001 = 0,01$

$$\begin{array}{r} 0,0001 \\ \times\ 100 \\ \hline 0,00\ 0100 \end{array}$$

0,0001 ← 4 casas

0,000100 ← 4 casas (não precisa)

OBS: Na prática, cada zero em um dos fatores cancela um zero (depois da vírgula) no outro fator.

2.16) $100 \times (0,2)^3 = 100 \times 0,008 = 0,8$

2.17) $(0,3)^2 \times 1,2 \times 0,1 = 0,09 \times 1,2 \times 0,1 = 0,0108$

$$\begin{array}{r} 0,09 \\ \times\ 1,2 \\ \hline 018 \\ +\ 009 \\ \hline 0,108 \end{array} \qquad \begin{array}{r} 0,108 \\ \times\ 0,1 \\ \hline 0108 \\ +\ 0000 \\ \hline 0,0108 \end{array}$$

2.18) $(0,2)^2 \times 3,5 \times 1,2 = \underbrace{0,04 \times 3,5}_{0,14} \times 1,2 = 0,168$

2.19) $4 - 5 \times (0,3)^2 = 4 - 5 \cdot 0,09 = 4 - 0,45 = 3,55$

2.20) $(0,4)^2 \div 0,5 = 0,16 \div 0,5 = 0,32$

$$\begin{array}{r|l} 0,160 & 0,50 \\ 10 & 0,32 \\ 0 & \end{array}$$

2.21) $(0,4)^2 \div 0,25 + (1,5)^2 = 0,16 \div 0,25 + 2,25 = 0,64 + 2,25 = 2,89$

2.22) $(1-0,7)^2 + (7-6)^5 = 0,3^2 + 1^5 = 0,09 + 1 = 1,09$

2.23) $(2-0,4)^2 + (3-0,6)^2 = 1,6^2 + 2,4^2 = 2,56 + 5,76 = 8,32$

2.24) $\sqrt{0,04} = \sqrt{\dfrac{4}{100}} = \dfrac{2}{10} = 0,2$

2.25) $\sqrt{0,81} = \sqrt{\frac{81}{100}} = \frac{9}{10} = 0,9$

2.26) $\sqrt{0,0144} = \sqrt{\frac{144}{10000}} = \frac{12}{100} = 0,12$

2.27) $\sqrt{0,0064} = \sqrt{\frac{64}{10000}} = \frac{8}{100} = 0,08$

2.28) $\sqrt{2,56} = \sqrt{\frac{256}{100}} = \frac{16}{10} = 1,6$

2.29) $\sqrt{1,44} = \sqrt{\frac{144}{100}} = \frac{12}{10} = 1,2$

2.30) $\sqrt{3,24} = \sqrt{\frac{324}{100}} = \frac{18}{10} = 1,8$

3) ***BATERIA DE EXERCICIOS Nº 3 - EXPRESSÕES ALGÉBRICAS/PRODUTO NOTÁVEL***

3.1) $(2x + 1)(x + 2) = 2x^2 + 4x + x + 2 = 2x^2 + 5x + 2$	3.9) $(x - 3)^2 = x^2 - 6x + 9$
3.2) $(2x - 3)(3x + 2) = 6x^2 + 4x - 9x - 6 = 6x^2 - 5x - 6$	3.10) $(3x + 2)^2 = 9x^2 + 12x + 4$
3.4) $(-x + 4)(-4x + 5) = 4x^2 - 5x - 16x + 20 = 4x^2 - 21x + 20$	3.11) $(2x - 3)^2 = 4x^2 - 12x + 9$
3.4) $2x(3 - 4x) = 6x - 8x^2$	3.12) $(x + 1)(x - 1) = x^2 - 1^2 = x^2 - 1$
3.5) $(x - 3)(-x - 6) = -x^2 - 6x + 3x + 18 = -x^2 - 3x + 18$	3.13) $(x + 2)(x - 2) = x^2 - 2^2 = x^2 - 4$
3.6) $(x + 1)^2 = x^2 + 2.x.1 + 1^2 = x^2 + 2x + 1$	3.14) $(x + 3)(x - 3) = x^2 - 9$
3.7) $(x + 2)^2 = x^2 + 4x + 4$	3.15) $(2x + 1)(2x - 1) = (2x)^2 - 1^2 = 4x^2 - 1$
3.8) $(x + 4)^2 = x^2 + 8x + 16$	3.16) $(x + ½)(x - ½) = x^2 - \left(\frac{1}{2}\right)^2 = x^2 - \frac{1}{4}$

Obs: $(A+B)^2 = A^2 + 2AB + B^2$

$(A-B)^2 = A^2 - 2AB + B^2$

$(A-B)(A+B) = A^2 - B^2$

4) **BATERIA DE EXERCICIOS Nº 4 – EQUAÇÕES E INEQUAÇÕES DO 1º GRAU**

4.1) $3(1 - x) + 2x - 8 = 10$

$\Rightarrow 3 - 3x + 2x - 8 = 10$

$\Rightarrow 3 - x - 8 = 10$

$\Rightarrow -x - 5 = 10$

$\Rightarrow -x = 10 + 5$

$\Rightarrow -x = 15 \cdot (-1)$

$\therefore x = -15$

4.2) $2x - 3 - (3 - x) = 0$

$\Rightarrow 2x - 3 - 3 + x = 0$

$\Rightarrow 3x - 6 = 0$

$\Rightarrow 3x = 6$

$\Rightarrow x = 6/3$

$\therefore x = 2$

4.3) $\frac{x}{2} + \frac{x+2}{3} = 4$

$\Rightarrow \frac{3x}{6} + \frac{2(x+2)}{6} = 4$

$\Rightarrow \frac{3x + 2x + 4}{6} = 4$

$\Rightarrow \frac{5x + 4}{6} = 4 \Rightarrow 5x + 4 = 24$

$\Rightarrow 5x = 24 - 4$

$\Rightarrow 5x = 20$

$\Rightarrow x = \frac{20}{5}$

$\therefore x = 4$

4.4) $\frac{3x}{1/3} + \frac{x+4}{3/1} = -2$

$\Rightarrow \frac{9x}{3} + \frac{x+4}{3} = -2 \Rightarrow \frac{10x + 4}{3} = -2$

$\Rightarrow 10x + 4 = -6 \Rightarrow 10x = -6 - 4 \Rightarrow 10x = -10$

$\Rightarrow x = \frac{-10}{10} \quad \therefore x = -1$

4.5) $2(3x + 2) - 5x - 6 > -9$

$\Rightarrow 6x + 4 - 5x - 6 > -9$

$\Rightarrow x - 2 > -9 \Rightarrow x > -9 + 2$

$\therefore x > -7$

4.6) $3x + 4 + 2(1 - x) > 5x - 6$

$\Rightarrow 3x + 4 + 2 - 2x > 5x - 6$

$\Rightarrow x + 6 > 5x - 6$

$\Rightarrow x - 5x > -6 - 6$

$\Rightarrow -4x > -12 \cdot (-1)$

$\Rightarrow 4x < 12$

$\Rightarrow x < \frac{12}{4} \quad \therefore x < 3$

OBS: EM UMA INEQUAÇÃO, AO MULTIPLICAR OS DOIS LADOS POR -1, DEVEMOS INVERTER O SENTIDO DA DESIGUALDADE.

4.7) $2x - 4 > \frac{1-3x}{2} \Rightarrow 2(2x-4) > 1-3x \Rightarrow 4x-8 > 1-3x$

$\Rightarrow 4x+3x > 1+8 \Rightarrow 7x > 9 \therefore x > \frac{9}{7}$

OBS:
AO MULTIPLICAR CRUZADO, TENHA ATENÇÃO SE UM DOS DENOMINADORES É NEGATIVO. SE FOR, TROQUE A DESIGUALDADE

4.8) $\frac{3x+5}{2} + \frac{2}{1/2} > \frac{4-x}{3} \Rightarrow \frac{3x+5+4}{2} > \frac{4-x}{3}$

(Positivos)

$\Rightarrow 3(3x+9) > 2(4-x)$

$\Rightarrow 9x + 27 > 8 - 2x$

$\Rightarrow 9x + 2x > 8 - 27$

$\Rightarrow 11x > -19 \quad \therefore x > -\frac{19}{11}$

5) **BATERIA DE EXERCICIOS Nº 5 – SISTEMAS DE EQUAÇÕES**

a) $\begin{cases} x + y = 8 \\ 2x - y = 1 \end{cases}$ (+)

$3x = 9$

$\therefore x = 3$

$3 + y = 8 \therefore y = 5$

$S = \{(3,5)\}$

b) $\begin{cases} 3x + y = -1 \\ 2x + y = 0 \end{cases}$ (−)

$x = -1$

$2(-1) + y = 0 \Rightarrow -2 + y = 0 \therefore y = 2$

$S = \{(-1,2)\}$

c) $\begin{cases} 5x + 2y = 3 \\ 2x - y = 3 \cdot 2 \end{cases} \Leftrightarrow \begin{cases} 5x + 2y = 3 \\ 4x - 2y = 6 \end{cases}$ (+)

$9x = 9$

$\therefore x = 1$

$2 \cdot 1 - y = 3$

$2 - y = 3$

$-y = 3 - 2$

$-y = 1 \cdot (-1) \therefore y = -1$

$S = \{(1,-1)\}$

d) $\begin{cases} x + 3y = -2 \\ 2x + 6y = -3 \end{cases}$ $\cdot 2$

$\Leftrightarrow$ $-\begin{cases} 2x + 6y = -4 \\ 2x + 6y = -3 \end{cases}$

$0 + 0 = -1$ ABSURDO!

Sistema IMPOSSÍVEL.

$S = \emptyset$

e) $\begin{cases} 2x + y = 12 \\ x - 3y = -1 \end{cases}$ $\cdot 3$

$\Leftrightarrow$ $+\begin{cases} 6x + 3y = 36 \\ x - 3y = -1 \end{cases}$

$7x = 35$

$\therefore x = 5$

$2 \cdot 5 + y = 12$

$y = 12 - 10$

$y = 2$

$S = \{(5, 2)\}$

f) $\begin{cases} 2x + 3y = 5 \\ 5x + 2y = 18 \end{cases}$ $\cdot 2$ $\cdot 3$

$\Leftrightarrow$ $-\begin{cases} 4x + 6y = 10 \\ 15x + 6y = 54 \end{cases}$

$11x = 44$

$\therefore x = 4$

$2 \cdot 4 + 3y = 5$

$3y = 5 - 8$

$3y = -3$

$\therefore y = -1$

$S = \{(4, -1)\}$

6) ***BATERIA DE EXERCICIOS Nº 6 – EQUAÇÕES 2º GRAU***

6.1) $x^2 - 4 = 0$

$x^2 = 4 \Rightarrow x = \pm 2$

6.2) $x^2 - 9 = 0$

$x^2 = 9 \Rightarrow x = \pm 3$

6.3) $x^2 + 4 = 0$

$x^2 = -4 \Rightarrow x \notin \mathbb{R}$

6.4) $2x^2 - 98 = 0$

$2x^2 = 98$

$x^2 = 98/2$

$x^2 = 49$

$x = \pm 7$

6.5) $-4x^2 + 9 = 0$

$+4x^2 = +9 \cdot (-1)$

$x^2 = 9/4$

$x = \pm 3/2$

6.6) $2x^2 + 8x = 0$

$2x(x+4) = 0$

$x_1 = 0$

$x_2 = -4$

6.7) $3x^2 + x = 0$

$x(3x+1) = 0$

$x_1 = 0$

$x_2 = -1/3$

6.8) $x^2 - 7x = 0$

$x(x-7) = 0$

$x_1 = 0$

$x_2 = 7$

6.9) $2x^2 - \sqrt{3}x = 0$

$x(2x - \sqrt{3}) = 0$

$x_1 = 0$

$x_2 = \frac{\sqrt{3}}{2}$

6.10) $3x^2 = 0$

$x^2 = 0$

$x = 0$

6.11) $x^2 - 5x + 6 = 0$

$S = 5 \quad x_1 = 2$

$P = 6 \quad x_2 = 3$

6.12) $x^2 + 2x - 3 = 0$

$S = -2 \quad x_1 = -3$

$P = -3 \quad x_2 = 1$

6.13) $x^2 + 6x + 5 = 0$

$S = -6 \quad x_1 = -5$

$P = 5 \quad x_2 = -1$

6.14) $-x^2 - 3x + 10 = 0$

$\Delta = 9 - 4(-1).10$

$\Delta = 9 + 40$

$\Delta = 49$

$x = \frac{3 \pm 7}{2(-1)}$

$x_1 = \frac{3-7}{-2} = 2$

$x_2 = \frac{3+7}{-2} = -5$

6.15) $2x^2 - 5x - 3 = 0$

$\Delta = 25 - 4.2(-3)$

$\Delta = 25 + 24$

$\Delta = 49$

$x = \frac{5 \pm 7}{4}$

$x_1 = 3 \; ; \; x_2 = \frac{2}{4} = \frac{1}{2}$

6.16) $3x^2 + 23x + 14 = 0$

$\Delta = 529 - 4.3.14$

$\Delta = 361$

$x = \frac{-23 \pm 19}{6}$

$x_1 = \frac{-4}{6} = \frac{-2}{3}$

$x_2 = \frac{-42}{6} = -7$

6.17) $6x^2 + x - 1 = 0$

$\Delta = 1 - 4.6.(-1)$

$\Delta = 25$

$x = \frac{-1 \pm 5}{12}$

$x_1 = \frac{-6}{12} = -1/2$

$x_2 = \frac{4}{12} = \frac{1}{3}$

6.18) $-x^2 - 3x + 4 = 0$

$S = 3 \quad x_1 = 4$

$P = -4 \quad x_2 = -1$

6.19) $x^2 - 10x + 25 = 0$

$S = 10 \quad x_1 = 5$

$P = 25 \quad x_2 = 5$

6.20) $-9x^2 + 6x - 5 = 0$

$\Delta = 36 - 4.(-9).(-5)$

$\Delta = -144$

$\Delta < 0 \Rightarrow x \notin \mathbb{R}$

OBS.

Quando b = 0 ou c = 0, a equação é dita incompleta, e pode ser resolvida sem o uso da "fórmula de Bháskara".

Quando a = 1, é aconselhável tentar resolver a equação usando o método "soma e produto", em que S = -b/a e P = c/a.

Se preferir, toda equação do segundo grau pode ser resolvida por Bháskara.

7) **BATERIA DE EXERCICIOS Nº 7 – PROPORÇÕES**

a) $\frac{x}{56} = \frac{3}{8} \Leftrightarrow x = \frac{3 \cdot 56}{8} = 21$ $\therefore x = 21$

b) $\frac{20-x}{20} = \frac{2}{5} \Leftrightarrow 20 - x = \frac{2 \cdot 20}{5} = 8$
$\Leftrightarrow -x = 8 - 20 \Leftrightarrow -x = -12 \cdot (-1)$ $\therefore x = 12$

c) $\frac{5+x}{8+x} = \frac{3}{4} \Leftrightarrow 4(5+x) = 3(8+x)$
$20 + 4x = 24 + 3x$
$4x - 3x = 24 - 20$
$\therefore x = 4$

d) $\frac{3x}{4} = \frac{2 \div 2}{6 \div 2}$ $\frac{3x}{4} = \frac{1}{3} \Leftrightarrow 9x = 4$ $\therefore x = \frac{4}{9}$

e) $\frac{x+1}{3} = \frac{1-x}{2} \Leftrightarrow 2x + 2 = 3 - 3x$
$\Leftrightarrow 2x + 3x = 3 - 2$
$\Leftrightarrow 5x = 1$ $\therefore x = 1/5$

f) $\frac{5}{4} = \frac{1+x}{x-3} \Leftrightarrow 5x - 15 = 4 + 4x$
$5x - 4x = 4 + 15$
$\therefore x = 19$

OBS: a, b NÃO NEGATIVOS
$\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$
$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$, $b \neq 0$

8) **BATERIA DE EXERCICIOS Nº 8 – RADICAIS**

8.1) $\sqrt{20} = \sqrt{4 \cdot 5} = 2\sqrt{5}$

8.2) $\sqrt{50} = \sqrt{25 \cdot 2} = 5\sqrt{2}$

8.3) $\sqrt{8} = \sqrt{4 \cdot 2} = 2\sqrt{2}$

8.4) $\sqrt{27} = \sqrt{9 \cdot 3} = 3\sqrt{3}$

8.5) $\sqrt{32} + \sqrt{18} = \sqrt{16 \cdot 2} + \sqrt{9 \cdot 2} = 4\sqrt{2} + 3\sqrt{2} = 7\sqrt{2}$

8.6) $\frac{3}{4} \cdot \sqrt{2{,}56} = \frac{3}{4} \cdot \frac{16}{10} = \frac{12}{10} = 1{,}2$

8.7) $\sqrt[3]{2} + \sqrt[3]{16} = \sqrt[3]{2} + \sqrt[3]{8 \cdot 2} = \sqrt[3]{2} + 2\sqrt[3]{2} = 3\sqrt[3]{2}$

8.8) $\frac{5}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$ $\frac{5\sqrt{2}}{2}$

8.9) $\frac{12}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$ $\frac{12\sqrt{2}}{x} = 6\sqrt{2}$

8.10) $\frac{\sqrt{2}}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}}$ $\frac{\sqrt{6}}{3}$

8.11) $\frac{2\sqrt{5}}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$ $\frac{2\sqrt{10}}{2} = \sqrt{10}$

8.12) $\frac{\sqrt{3}}{2\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$ $\frac{\sqrt{6}}{2 \cdot 2} = \frac{\sqrt{6}}{4}$

8.13) $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$ $\frac{\sqrt{6}+\sqrt{4}}{2} = \frac{\sqrt{6}+2}{2}$

8.14) $\frac{1}{\sqrt{5}+\sqrt{3}} = \frac{(\sqrt{5}-\sqrt{3})}{(\sqrt{5}-\sqrt{3})} = \frac{\sqrt{5}-\sqrt{3}}{5-3} = \frac{\sqrt{5}-\sqrt{3}}{2}$

8.15) $\frac{\sqrt{2}}{\sqrt{2}-1} \frac{(\sqrt{2}+1)}{(\sqrt{2}+1)}$ $\frac{2+\sqrt{2}}{2-1} = 2+\sqrt{2}$

8.16) $\frac{\sqrt{3}}{\sqrt{3}+\sqrt{2}} \frac{(\sqrt{3} \cdot \sqrt{2})}{(\sqrt{3}-\sqrt{2})}$ $\frac{3-\sqrt{6}}{3-2} = 3-\sqrt{6}$

8.17) $(\sqrt{10}+\sqrt{3}) \cdot (\sqrt{10}-\sqrt{3}) = 10 - 3 = 7$

8.18) $(\sqrt{12}+\sqrt{2}) \cdot (\sqrt{12}-\sqrt{2}) = 12 - 2 = 10$

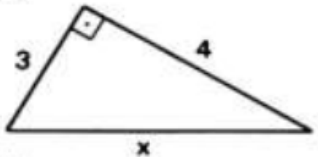
8.19) $\sqrt[3]{-\frac{8}{27}} - \sqrt{\frac{25}{64}} = \frac{-2}{3} - \frac{5}{8} = \frac{-31}{24}$

8.20) $7\sqrt{32} - 5\sqrt{2} + \sqrt{8} = 7 \cdot 4\sqrt{2} - 5\sqrt{2} + 2\sqrt{2} = 28\sqrt{2} - 5\sqrt{2} + 2\sqrt{2} = 25\sqrt{2}$

$\sqrt{16 \cdot 2} = 4\sqrt{2}$ $\sqrt{4 \cdot 2} = 2\sqrt{2}$

9) **BATERIA DE EXERCICIOS Nº 9 – TEOREMA DE PITÁGORAS**

a)

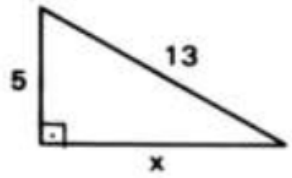


$x^2 = 3^2 + 4^2$

$x^2 = 9 + 16$

$x^2 = 25 \quad \therefore x = 5$

b)



$13^2 = 5^2 + x^2$

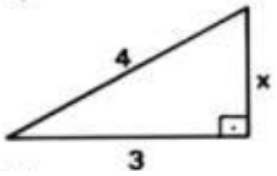
$169 = 25 + x^2$

$169 - 25 = x^2$

$144 = x^2$

$\therefore x = 12$

c)



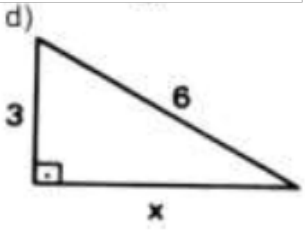
$4^2 = 3^2 + x^2$

$16 = 9 + x^2$

$16 - 9 = x^2$

$7 = x^2 \quad \therefore x = \sqrt{7}$

d)



$6^2 = 3^2 + x^2$

$36 = 9 + x^2$

$36 - 9 = x^2$

$27 = x^2 \Rightarrow x = \sqrt{27}$

$\therefore x = 3\sqrt{3}$

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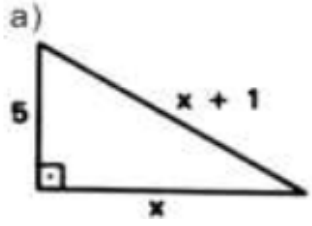
a)



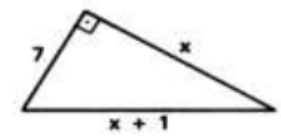
$(x+1)^2 = x^2 + 5^2$

$x^2 + 2x + 1 = x^2 + 25$

$x^2 + 2x - x^2 = 25 - 1$

$2x = 24 \quad \therefore x = 12$

b)



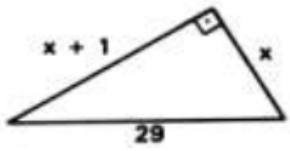
$(x+1)^2 = x^2 + 7^2$

$x^2 + 2x + 1 = x^2 + 49$

$2x = 48$

$x = 24$

c)



$29^2 = (x+1)^2 + x^2$

$841 = x^2 + 2x + 1 + x^2$

$\Rightarrow 2x^2 + 2x - 840 = 0 \div 2$

$\Rightarrow x^2 + x - 420 = 0$

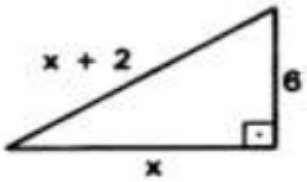
$\Delta = 1 - 4 \cdot 1 (-420)$

$\Delta = 1681 \rightsquigarrow x = \dfrac{-1 \pm \sqrt{1681}}{2}$

$x_1 = \dfrac{-1-41}{2} = -21$ NÃO CONVÉM.

$x_2 = \dfrac{-1+41}{2} = 20$

d)



$(x+2)^2 = 6^2 + x^2$

$x^2 + 4x + 4 = 36 + x^2$

$4x = 36 - 4$

$4x = 32 \quad \therefore x = 8$

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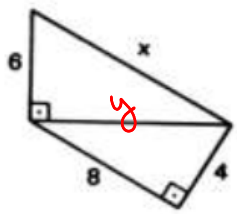
a)



$y^2 = 8^2 + 4^2$

$y^2 = 64 + 16$

$y^2 = 80$

$x^2 = 6^2 + y^2$

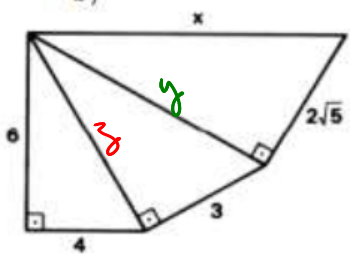
$x^2 = 36 + 80$

$x^2 = 116$

$x = \sqrt{116}$

$\therefore x = 2\sqrt{29}$

b)



$z^2 = 6^2 + 4^2$

$z^2 = 36 + 16$

$z^2 = 52$

$y^2 = 3^2 + z^2$

$y^2 = 9 + 52$

$y^2 = 61$

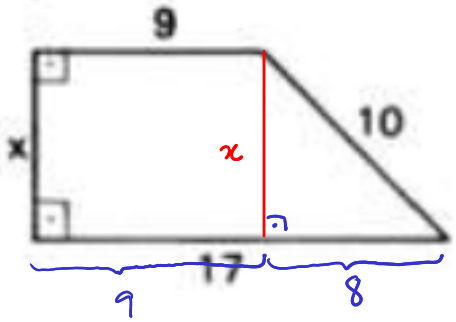
$x^2 = (2\sqrt{5})^2 + y^2$

$x^2 = 4 \cdot 5 + 61$

$x^2 = 20 + 61$

$x^2 = 81 \quad \therefore x = 9$

a)



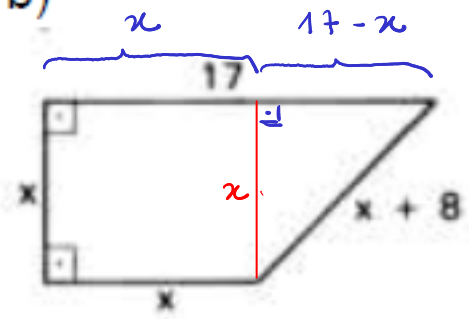
$10^2 = x^2 + 8^2$

$100 = x^2 + 64$

$100 - 64 = x^2$

$36 = x^2 \quad \therefore x = 6$

b)



$(x+8)^2 = x^2 + (17-x)^2$

$x^2 + 16x + 64 = x^2 + 289 - 34x + x^2$

$x^2 - 34x + 289 - 16x - 64 = 0$

$x^2 - 50x + 225 = 0$

$\Delta = 2500 - 4.1.225$

$\Delta = 1600$

$x = \frac{50 \pm 40}{2}$

$x_1 = \frac{90}{2} = 45$ NÃO CONVÉM!

$x_2 = \frac{10}{2} = 5$