



# Resoluções das atividades

## Capítulo 5 | Operações fundamentais com números racionais

### Testando seus conhecimentos (página 68)

1 a)  $\left(-\frac{8}{7}\right) + \left(-\frac{1}{6}\right) =$

$$-\frac{48}{42} - \frac{7}{42} = -\frac{55}{42}$$

b)  $\frac{2}{9} + \left(-\frac{3}{10}\right) =$

$$\frac{20}{90} - \frac{27}{90} = -\frac{7}{90}$$

c)  $(-12,5) + (-4,16) =$

$$-12,5 - 4,16 = -16,66$$

d)  $-\frac{4}{5} + \frac{1}{2} =$

$$-\frac{8}{10} + \frac{5}{10} = -\frac{3}{10} \text{ ou } -0,3$$

2 a)  $\left(-\frac{2}{9}\right) - \left(-\frac{1}{4}\right) =$

$$-\frac{8}{36} + \frac{9}{36} = \frac{1}{36} = 0,02777... = 0,02\bar{7}$$

b)  $1,86 - (-0,35) =$

$$1,86 + 0,35 = 2,21$$

c)  $\left(-\frac{1}{8}\right) - (-0,75) =$

$$-0,125 + 0,75 = 0,625$$

d)  $(-1,4) - (-5) =$

$$-1,4 + 5 = 3,6$$

3 a)  $(-0,555...) + (-0,4) =$

$$-\frac{5}{9} + \left(-\frac{4}{10}\right) = -\frac{5}{9} - \frac{4}{10} =$$

$$\frac{-50 - 36}{90} = -\frac{86}{90} = -0,9555...$$

b)  $\left(-1\frac{1}{2}\right) + (2,111...) =$

$$-\left(\frac{3}{2}\right) + \left(\frac{21-2}{9}\right) = -\frac{3}{2} + \frac{19}{9} =$$

$$\frac{-27 + 38}{18} = \frac{11}{18} = 0,6111...$$

4 Montar-se a expressão e calcula-se o que se pede:

$$8\frac{5}{6} - 2\frac{2}{3} = \frac{53}{6} - \frac{8}{3} = \frac{53-16}{6} = \frac{37}{6}$$

$$\frac{37}{6} - \frac{5}{8} = \frac{148-15}{24} = \frac{133}{24}$$

$$\frac{133}{24} - 5\frac{1}{2} = \frac{133}{24} - \frac{11}{2} = \frac{133}{24} - \frac{132}{24} = \frac{1}{24}$$

Assim, restou  $\frac{1}{24}$  kg de ração na loja.

### Testando seus conhecimentos (página 70)

1 a)  $\left(-\frac{8}{9}\right) \cdot \left(+\frac{4}{5}\right) =$

$$-\frac{32}{45}$$

b)  $(-2,25) \cdot (-1,3) =$

$$2,25$$

$$\times \frac{1,3}{675}$$

$$+ \frac{225}{2,925}$$

c)  $(+0,2) \cdot \left(-\frac{1}{5}\right) \cdot \left(+\frac{1}{3}\right) =$

$$\frac{2}{10} \cdot \left(-\frac{1}{5}\right) \cdot \left(+\frac{1}{3}\right) = \frac{1}{5} \cdot \left(-\frac{1}{15}\right) = -\frac{1}{75}$$

d)  $(+0,6) \cdot (-3,64) =$

$$\frac{6}{10} \cdot \left(-\frac{364}{100}\right) = -\frac{2184}{1000} = -2,184$$

e)  $\left(+\frac{2}{4}\right) \cdot \left(-\frac{1}{2}\right) \cdot \left(\frac{8}{7}\right) =$

$$-\frac{2}{7}$$

f)  $(-2,3) \cdot \left(-\frac{3}{2}\right) =$

$$-\frac{23}{10} \cdot \left(-\frac{3}{2}\right) = \frac{69}{20}$$



2 a)  $\left(+\frac{3}{21}\right) \cdot \left(-\frac{14}{15}\right)$   
 $\frac{1}{3} \cdot \left(-\frac{2}{5}\right) = -\frac{2}{15}$

b)  $\left(-\frac{1}{12}\right) \cdot \left(-\frac{15}{9}\right)$   
 $-\frac{1}{4} \cdot \left(-\frac{5}{9}\right) = \frac{5}{36}$

c)  $\left(-\frac{16}{18}\right) \cdot \left(+\frac{5}{4}\right)$   
 $-\frac{4}{9} \cdot \left(+\frac{5}{1}\right) = -\frac{2}{9} \cdot \left(+\frac{5}{1}\right) = -\frac{10}{9}$

d)  $\left(-\frac{3}{12}\right) \cdot \left(-\frac{36}{9}\right) \cdot \left(+\frac{4}{3}\right) \cdot \left(-\frac{5}{8}\right)$   
 $-\frac{1}{4} \cdot \left(-\frac{4}{1}\right) \cdot \left(+\frac{1}{1}\right) \cdot \left(-\frac{5}{2}\right) = -\frac{5}{6}$

3  $\frac{7}{4} \cdot \frac{1}{3} \cdot (-8) \cdot \frac{3}{14} = -\frac{8}{8} = -1$   
 $525 \cdot J = 525 \cdot (-1) = -525$

4 Interpretando os dados da questão e resolvendo o cálculo, tem-se:

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

Logo, a parte que representa o plantio das macieiras equivale a  $\frac{1}{12}$  da fazenda de Diogo.

**Agora é com você! (página 72)**

1  $M = \left\{ \frac{8}{7} - \left[ \frac{3}{4} + \left( \frac{1}{3} \cdot \frac{1}{2} + \frac{1}{2} \right) \cdot \frac{4}{7} \right] \cdot \left[ 8\frac{1}{4} - \left( \frac{9}{2} + 3 \right) \right] \right\} \cdot \frac{56}{37} - \frac{1}{2}$

$$M = \left\{ \frac{8}{7} - \left[ \frac{3}{4} + \left( \frac{1}{12} + \frac{1}{2} \right) \cdot \frac{4}{7} \right] \cdot \left[ \frac{33}{4} - \frac{15}{2} \right] \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \left\{ \frac{8}{7} - \left[ \frac{3}{4} + \frac{7}{12} \cdot \frac{4}{7} \right] \cdot \left[ \frac{33-30}{4} \right] \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \left\{ \frac{8}{7} - \left[ \frac{3}{4} + \frac{1}{3} \right] \cdot \frac{3}{4} \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \left\{ \frac{8}{7} - \frac{13}{12} \cdot \frac{1}{4} \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \left\{ \frac{8}{7} - \frac{13}{16} \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \left\{ \frac{128-91}{112} \right\} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \frac{37}{112} \cdot \frac{56}{37} - \frac{1}{2}$$

$$M = \frac{1}{2} - \frac{1}{2} = 0$$

Logo,  $M - 10 = 0 - 10 = -10$ .

**Testando seus conhecimentos (página 75)**

1 a)  $\left(+\frac{3}{8}\right) : \left(-\frac{2}{7}\right) =$   
 $\frac{3}{8} \cdot \left(-\frac{7}{2}\right) = -\frac{21}{16}$

b)  $\left(-\frac{4}{9}\right) : \left(+\frac{2}{7}\right) =$   
 $-\frac{4}{9} \cdot \frac{7}{2} = -\frac{28}{18} = -\frac{14}{9}$

c)  $(+4) : \left(-\frac{3}{4}\right) =$   
 $+4 \cdot \left(-\frac{4}{3}\right) = -\frac{16}{3}$

d)  $(-65,72) : (-12,4) = (-65,72) : (-12,4) = 5,3$

$$\begin{array}{r} 6572 \overline{) 1240} \\ -6200 \quad 5,3 \\ \hline 3720 \\ -3720 \\ \hline (0) \end{array}$$

2 a)  $\frac{-5}{7} =$

$$\frac{-9}{5} \cdot \frac{8}{7} = -\frac{72}{35}$$

b)  $\frac{-2}{5} =$

$$-2 \cdot \left(-\frac{4}{5}\right) = \frac{8}{5}$$



$$c) \frac{-3}{7} \cdot \frac{1}{18} = -\frac{3}{7} \cdot \frac{1}{18} = -\frac{3}{126} = -\frac{1}{42}$$

$$d) \frac{-1\frac{1}{3}}{4\frac{1}{2}} = -\frac{4}{3} \cdot \frac{2}{9} = -\frac{8}{27}$$

$$\begin{aligned} 3) \quad & \frac{17-1}{9} + \frac{54-5}{9} = \frac{16}{9} + \frac{49}{9} = \\ & \frac{-4}{9} + \frac{7}{9} = \frac{-4}{9} + \frac{7}{9} = \\ & = \left( -\frac{16}{9} \right) + \left( \frac{49}{9} \right) = \frac{33}{9} = 11 \end{aligned}$$

4) Calculando a capacidade total de água, tem-se:

$$25 \cdot 2 + 20 \cdot 1 + 40 \cdot \frac{1}{2} + 60 \cdot \frac{1}{4} =$$

$$50 + 20 + \frac{40}{2} + \frac{60}{4} =$$

$$50 + 20 + 20 + 15 = 105$$

Logo, esse consumidor comprará um total de 105 litros de água.

Agora é com você! (página 77)

$$1) a) \frac{1-\frac{3}{4}}{\frac{1}{2}-\frac{1}{5}+\frac{1}{6}} = \frac{\frac{1}{4}}{\frac{15-6+5}{30}} = \frac{1}{4} \cdot \frac{30}{14} = \frac{15}{28}$$

$$b) \frac{\left(-\frac{2}{5}\right) \cdot \left(-\frac{4}{3}\right)}{\left(-\frac{1}{2}+3\right)} = \frac{\left(-\frac{2}{5}\right) \cdot \left(-\frac{4}{3}\right)}{\left(-\frac{1+6}{2}\right)} = \frac{\frac{3}{10}}{\frac{5}{2}} = \frac{3}{10} \cdot \frac{2}{5} = \frac{3}{25}$$

$$c) \left[ \left( \frac{3}{5} - \frac{7}{9} : \frac{5}{18} \right) - \left( \frac{1}{2} + \frac{3}{8} : \frac{9}{4} \right) \right] \cdot \frac{5}{43} =$$

$$\left[ \left( \frac{3}{5} - \frac{7}{9} \cdot \frac{18}{5} \right) - \left( \frac{1}{2} + \frac{3}{8} \cdot \frac{4}{9} \right) \right] \cdot \frac{5}{43} =$$

$$\left[ \left( \frac{3}{5} - \frac{14}{5} \right) - \left( \frac{1}{2} + \frac{1}{6} \right) \right] \cdot \frac{5}{43} =$$

$$\left[ \left( -\frac{11}{5} \right) - \left( \frac{1 \cdot 3 + 1 \cdot 1}{6} \right) \right] \cdot \frac{5}{43} =$$

$$\left[ \left( -\frac{11}{5} \right) - \left( \frac{4}{3} \right) \right] \cdot \frac{5}{43} =$$

$$\left[ -\frac{11}{5} - \frac{2}{3} \right] \cdot \frac{5}{43} = \left[ -\frac{11 \cdot 3 - 2 \cdot 5}{15} \right] \cdot \frac{5}{43} =$$

$$\left[ \frac{-33-10}{15} \right] \cdot \frac{5}{43} = \left[ \frac{-43}{15} \right] \cdot \frac{5}{43} = -\frac{1}{3}$$

Agora é com você! (página 79)

$$1) a) -\frac{1}{8}$$

$$b) 1$$

$$c) \frac{1}{9}$$

$$d) -\frac{4}{5}$$

$$2) a) 1 - 1,2 = -0,2$$

$$b) \frac{16}{9} \cdot \frac{1}{4} = \frac{4}{9}$$

Agora é com você! (página 80)

$$1) a) \frac{1}{5}$$

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

$$c) \left( -\frac{2}{7} \right)^3 = -\frac{8}{343}$$

$$d) (-4)^4 = 256$$

$$2) a) 10^{-3}$$

$$b) 10^{-4}$$

$$c) 10^{-6}$$

Testando seus conhecimentos (página 82)

$$1) a) \frac{9}{25}$$

$$b) \frac{1}{49}$$

$$c) 1$$

$$d) \left( -\frac{1}{8} \right)^2 = \frac{1}{64}$$

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

$$f) \left( -\frac{7}{4} \right)^3 = -\frac{343}{64}$$



2 a)  $5^{-4}$

b)  $\frac{1}{5^3} = 5^{-3}$

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

d)  $\frac{1}{2^3} = 2^{-3}$

3 a)  $\left(-\frac{1}{2}\right)^7$

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

c)  $(-0,8)^6$

d)  $\left(\frac{4}{9}\right)^{-2+6} = \left(\frac{4}{9}\right)^4$

e)  $\left(-\frac{1}{2}\right)^{-6+(-1)+2} = \left(-\frac{1}{2}\right)^{-5}$

f)  $\left(-\frac{1}{3}\right)^2 \cdot \left(-\frac{1}{3}\right)^6 = \left(-\frac{1}{3}\right)^8$

4  $\mu\text{m} = 0,000001 \text{ m} = 10^{-6} \text{ m}$

$\text{nm} = 0,000000001 \text{ m} = 10^{-9} \text{ m}$

$\text{pm} = 0,000000000001 \text{ m} = 10^{-12} \text{ m}$

**Testando seus conhecimentos (página 84)**

1 a)  $\frac{7}{5}$

b)  $\notin \mathbb{Q}$

c)  $\frac{1}{17}$

d)  $\frac{19}{12}$

e)  $\notin \mathbb{Q}$

f)  $\frac{5}{10} = \frac{1}{2}$

2 b)  $\frac{1}{6}$

f)  $\frac{5}{7}$

3 a)  $\sqrt{\frac{64}{100}} = \frac{8}{10} = 0,8$

b)  $-\sqrt{\frac{625}{100}} = -\frac{25}{10} = -2,5$

c)  $\sqrt{\frac{361}{100}} = \frac{19}{10} = 1,9$

d)  $-\sqrt{\frac{16}{100}} = -\frac{4}{10} = -0,4$

e)  $-\sqrt{\frac{36}{100}} = -\frac{6}{10} = -0,6$

f)  $\sqrt{\frac{289}{100}} = \frac{17}{10} = 1,7$

**Exercícios (página 85)**

1  $\sqrt{12,96} = \sqrt{\frac{1296}{100}} = \frac{36}{10} = 3,6$

O lado do quadrado mede 3,6 cm.

**Testando seus conhecimentos (página 87)**

1 a)  $\frac{1}{9} - \left(-\frac{13}{6}\right) \cdot \left(\frac{1}{13}\right) + \left(-\frac{7}{4}\right) \cdot \left(-\frac{5}{7}\right)$

$$\frac{1}{9} + \frac{1}{6} + \frac{5}{4} = \frac{4}{36} + \frac{6}{36} + \frac{45}{36} = \frac{55}{36}$$

b)  $\left[\left(\frac{1}{2}\right) : \left(\frac{1}{3}\right)\right] : \left[\left(\frac{1}{2}\right) + \left(\frac{1}{3}\right)\right]$

$$\left[\frac{1}{2} \cdot \frac{3}{1}\right] : \left[\frac{3+2}{6}\right] = \frac{3}{2} \cdot \frac{6}{5} = \frac{9}{5}$$

c)  $-0,5 \cdot \left[\left(-\frac{1}{4}\right) : 2 - 1\right]$

$$-\frac{1}{2} \cdot \left[-\frac{1}{4} \cdot \frac{1}{2} - 1\right] = -\frac{1}{2} \cdot \left[-\frac{1}{8} - 1\right] =$$

$$-\frac{1}{2} \cdot \left[\frac{-1-8}{8}\right] = \frac{9}{16}$$

d)  $1,26 - (3,06 - 0,2 \cdot 0,3) : 0,3$

$$1,26 - (3,06 - 0,06) : 0,3 =$$

$$1,26 - 3 : 0,3 =$$

$$1,26 - 10 =$$

$$-8,74$$

2 a)  $\left(\frac{3}{2} - \frac{1}{4} \cdot \frac{8}{3}\right)^{-2}$

$$\left(\frac{3}{2} - \frac{2}{3}\right)^{-2} = \left(\frac{9-4}{6}\right)^{-2} = \left(\frac{5}{6}\right)^{-2} = \frac{36}{25}$$



$$b) \left(3 - \frac{5}{8} \cdot \frac{3}{4}\right) \cdot \left(\frac{3}{2}\right)^{-2}$$

$$\left(3 - \frac{5}{8} \cdot \frac{4}{3}\right) \cdot \left(\frac{4}{9}\right) = \left(3 - \frac{5}{6}\right) \cdot \frac{4}{9} = \left(\frac{18-5}{6}\right) \cdot \frac{4}{9} =$$

$$\frac{13}{6} \cdot \frac{4}{9} = \frac{26}{27}$$

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

$$\left(\frac{4}{9}\right) - \frac{1}{9} + \frac{4}{1} = \frac{3}{9} + \frac{4}{1} = \frac{3+36}{9} = \frac{39}{9} = \frac{13}{3}$$

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

$$\frac{1}{4} + \frac{25}{4} \cdot \frac{3}{5} = \frac{1}{4} + \frac{15}{4} = \frac{16}{4} = 4$$

$$3) a) -\frac{3}{8} \cdot \left[1 - \sqrt{\frac{9}{25}} - 3^{-1} + 0,5\right] =$$

$$-\frac{3}{8} \cdot \left[1 - \frac{3}{5} - \frac{1}{3} + \frac{1}{2}\right] = -\frac{3}{8} \cdot \left[\frac{30-18-10+15}{30}\right] =$$

$$-\frac{3}{8} \cdot \frac{17}{30} = -\frac{17}{80}$$

$$b) \frac{1 - \left(\frac{1}{6} - \frac{1}{3}\right)}{\left(\frac{1}{6} + \frac{1}{2}\right)^2 + \frac{3}{2}} =$$

$$\frac{1 - \left(\frac{1-2}{6}\right)}{\left(\frac{1+3}{6}\right)^2 + \frac{3}{2}} = \frac{1 - \left(-\frac{1}{6}\right)}{\left(\frac{4}{6}\right)^2 + \frac{3}{2}} = \frac{1 + \frac{1}{6}}{\left(\frac{2}{3}\right)^2 + \frac{3}{2}} =$$

$$\frac{\frac{7}{6}}{\frac{4}{9} + \frac{3}{2}} = \frac{7}{6} \cdot \frac{18}{35} = \frac{3}{5}$$

### Atividades propostas (página 88)

1

$$\left(\frac{1}{12} + \frac{1}{12}\right) + \left(\frac{1}{12} + \frac{1}{2} \cdot \frac{1}{12}\right) + \left(\frac{1}{2} \cdot \frac{1}{12} + \frac{1}{12} + \frac{1}{12}\right) + \left(\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{2}{3} \cdot \frac{1}{12}\right) =$$

$$\frac{2}{12} + \left(\frac{2+1}{24}\right) + \left(\frac{1+2+2}{24}\right) + \left(\frac{3+3+3+2}{36}\right) =$$

$$\frac{12}{72} + \frac{9}{72} + \frac{15}{72} + \frac{22}{72} = \frac{58}{72} = \frac{29}{36}$$

$$2) x = \frac{2}{12} + 1 = \frac{1}{6} + \frac{6}{6} = \frac{7}{6}$$

$$y = \frac{1}{5} \cdot \left(-\frac{1}{10}\right) \cdot 25 = -\frac{25}{50} = -\frac{1}{2}$$

$$x \cdot y = \frac{7}{6} \cdot \left(-\frac{1}{2}\right) = -\frac{7}{12}$$

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

$$b) \frac{\frac{3}{2} - \frac{2}{5}}{\frac{1}{3} + \frac{2}{2}} = \frac{15 - 4}{\frac{2+9}{6}} = \frac{11}{\frac{11}{6}} = \frac{3}{5}$$

$$4) [(9,34 - 23,4) : (-7,03) - (14 - 0,395) : 13,605] : 0,5 =$$

$$[(-14,06) : (-7,03) - (13,605) : 13,605] : 0,5 =$$

$$[(-14,06) : (-7,03) - 1] : 0,5 =$$

$$[2 - 1] : 0,5 =$$

$$1 : 0,5 = 2$$

$$5) a) \left[\left(-6 + \frac{3}{5}\right) \cdot \frac{2}{9} - \left(-4 - \frac{3}{8}\right) \cdot \frac{2}{7}\right] + \left(4 - \frac{5}{4} \cdot \frac{79}{25}\right) =$$

$$\left[\left(\frac{-30+3}{5}\right) \cdot \frac{2}{9} - \left(\frac{-32-3}{8}\right) \cdot \frac{2}{7}\right] + \left(4 - \frac{79}{20}\right) =$$

$$\left[\left(-\frac{27}{5}\right) \cdot \frac{2}{9} - \left(-\frac{35}{8}\right) \cdot \frac{2}{7}\right] + \left(\frac{80-79}{20}\right) =$$

$$\left(-\frac{6}{5} + \frac{5}{4}\right) + \frac{1}{20} = \frac{-24+25}{20} + \frac{1}{20} = \frac{1}{20} + \frac{1}{20} = \frac{2}{20} = \frac{1}{10}$$

$$b) \left[\left(-5 + \frac{3}{4} \cdot \frac{1}{6}\right) \cdot \left(-\frac{1}{39}\right) - \left(-6 + \frac{1}{3} \cdot \frac{3}{5}\right) \cdot \frac{1}{29}\right] - \left(\frac{1}{5} - \frac{1}{8}\right) =$$

$$\left(-5 + \frac{1}{8}\right) \cdot \left(-\frac{1}{39}\right) - \left(-6 + \frac{1}{5}\right) \cdot \frac{1}{29} - \left(\frac{8-5}{40}\right) =$$

$$-\frac{39}{8} \cdot \left(-\frac{1}{39}\right) + \frac{29}{5} \cdot \frac{1}{29} - \frac{3}{40} =$$

$$\frac{1}{8} + \frac{1}{5} - \frac{3}{40} = \frac{5+8-3}{40} = \frac{10}{40} = \frac{1}{4}$$

$$6) a) \frac{1}{10} + \frac{5}{8} + 3 \cdot \frac{3}{20} = \frac{1}{10} + \frac{5}{8} + \frac{9}{20} = \frac{4+25+18}{40} = \frac{47}{40}$$

Como  $\frac{47}{40} > 1$ , a personagem de Livia conseguiu completar a barra de energia após o uso dos itens.

$$b) \frac{47}{40} - \frac{3}{20} = \frac{47-6}{40} = \frac{41}{40} > 1$$

Logo, não era necessário o uso dos três itens, pois apenas dois já seriam suficientes para completar a barra de energia.



$$\begin{aligned} 7) & \left\{ \left[ \left( \frac{2}{5} - \frac{1}{8} \right) + 1 \right] \cdot \frac{16}{17} \right\} : 0,4 \\ & \left\{ \left[ \frac{11}{40} + 1 \right] \cdot \frac{16}{17} \right\} : \frac{2}{5} \\ & \left\{ \frac{\cancel{51}^3 \cdot \cancel{16}^2}{\cancel{40}_5 \cdot \cancel{17}} \right\} \cdot \frac{5}{2} \\ & \frac{6}{\cancel{8}} \cdot \frac{\cancel{8}}{2} = 3 \end{aligned}$$

$$\begin{aligned} 8) \quad A &= \sqrt{\left(-\frac{1}{2}\right)^2 \cdot \left(+\frac{3}{2}\right)^{-2} + \left(\frac{2}{3}\right)^3 \cdot \left(-\frac{1}{3}\right)^{-2}} \\ A &= \sqrt{\frac{1}{\cancel{4}} \cdot \frac{\cancel{4}}{9} + \frac{8}{\cancel{27}_3} \cdot \frac{\cancel{9}}{1}} \\ A &= \sqrt{\frac{1}{9} + \frac{8}{3}} \\ A &= \sqrt{\frac{1+24}{9}} \\ A &= \frac{5}{3} \end{aligned}$$

$$\begin{aligned} \sqrt{A^2 - 1} &= \sqrt{\left(\frac{5}{3}\right)^2 - 1} = \\ &= \sqrt{\frac{25}{9} - 1} = \\ &= \sqrt{\frac{25-9}{9}} = \\ &= \sqrt{\frac{16}{9}} = \frac{4}{3} \end{aligned}$$

**Mergulhando fundo (página 91)**

$$\begin{aligned} 1) & [(25 + 25 \cdot 0,7) + (25 + 25 \cdot 0,7) \cdot 0,15] \cdot 3,2 \\ & [(25 + 17,5) + (25 + 17,5) \cdot 0,15] \cdot 3,2 \\ & [42,5 + 42,5 \cdot 0,15] \cdot 3,2 = [42,5 + 6,375] \cdot 3,2 = \\ & 48,875 \cdot 3,2 = 156,4 \end{aligned}$$

Logo, o valor pago por Danilo é de R\$156,40.

$$\begin{aligned} 2) \quad a) & \left\{ 3\frac{1}{4} + \left[ \left( 1 + \frac{2}{3} \right) + \left( \frac{5}{4} - \frac{1}{5} \right) \right] + 1\frac{1}{6} \right\} - 6\frac{2}{15} = \\ & \frac{13}{4} + \left[ \frac{5}{3} + \frac{5}{4} - \frac{1}{5} \right] + \frac{7}{6} - \frac{92}{15} = \frac{13}{4} + \frac{5}{3} + \frac{5}{4} - \frac{1}{5} + \frac{7}{6} - \frac{92}{15} = \\ & \frac{195}{60} + \frac{100}{60} + \frac{75}{60} - \frac{12}{60} + \frac{70}{60} - \frac{368}{60} = \frac{60}{60} = 1 \end{aligned}$$

$$\begin{aligned} b) & \left(-2 + \frac{1}{3}\right)^2 \cdot \left(0,4 - \frac{1}{5}\right)^2 - 0,7 \cdot \sqrt{\frac{36}{49}} = \\ & \left(\frac{-6+1}{3}\right)^2 \cdot \left(\frac{2}{5} - \frac{1}{5}\right)^2 - \frac{7}{10} \cdot \frac{6}{7} = \frac{25}{9} \cdot \left(\frac{1}{5}\right)^2 - \frac{6}{10} = \\ & \frac{1}{9} - \frac{6}{10} = \frac{10-54}{90} = -\frac{44}{90} = -\frac{22}{45} \end{aligned}$$

$$\begin{aligned} c) & \frac{\left(\frac{1}{4} - \frac{1}{5}\right) - \left(\frac{7}{2} - \frac{7}{3}\right)}{\left(\frac{1}{2} + \frac{1}{4} - \frac{15}{8}\right)^2} \cdot \left(1 - \frac{14}{81}\right)^{-1} + 1 = \\ & \frac{\left(\frac{5-4}{20}\right) - \left(\frac{21-14}{6}\right)}{\left(\frac{4+2-15}{8}\right)^2} \cdot \left(\frac{81-14}{81}\right)^{-1} + 1 = \\ & \frac{\frac{1}{20} - \frac{7}{6}}{\left(\frac{-9}{8}\right)^2} \cdot \left(\frac{67}{81}\right)^{-1} + 1 = \frac{\cancel{3} \cdot \cancel{70}^{-1}}{\cancel{15} \cdot \cancel{60}} \cdot \frac{\cancel{64}^{16}}{81} \cdot \frac{81}{\cancel{67}} + 1 = \\ & -\frac{16}{15} + 1 = \frac{-16+15}{15} = -\frac{1}{15} \end{aligned}$$

$$\begin{aligned} d) & \frac{\left(-\frac{4}{3}\right)^{-1} + \left(2 - \frac{3}{2}\right)^{-1} + \frac{1}{3}}{\left(\frac{4}{5} - 1\right) + \frac{1}{2}} = \\ & \frac{-\frac{3}{4} + \left(\frac{1}{2}\right)^{-1} + \frac{1}{3}}{\left(\frac{4-5}{5}\right) + \frac{1}{2}} = \frac{-\frac{3}{4} + \frac{2}{1} + \frac{1}{3}}{-\frac{1}{5} + \frac{1}{2}} = \frac{-9+24+4}{\frac{-2+5}{10}} = \\ & \frac{19}{12} \cdot \frac{10}{3} = \frac{190}{36} = \frac{95}{18} \end{aligned}$$

$$\begin{aligned} 3) \quad A &= \left[ \left( \frac{1}{2} - \frac{1}{4} \right)^{-2} : \left( \frac{1}{2} + 1 \right)^{-1} \right] - \left[ \left( \frac{1}{4} - \frac{1}{2} \right)^{-1} - \left( 1 + \frac{1}{2} \right)^{-2} \right] \\ A &= \left[ \left( \frac{2-1}{4} \right)^{-2} : \left( \frac{3}{2} \right)^{-1} \right] - \left[ \left( \frac{1-2}{4} \right)^{-1} - \left( \frac{3}{2} \right)^{-2} \right] \\ A &= \left[ 16 \cdot \frac{3}{2} \right] - \left[ -4 - \frac{4}{9} \right] = 24 - \left[ \frac{-36-4}{9} \right] = 24 + \frac{40}{9} = \\ & \frac{216+40}{9} = \frac{256}{9} \rightarrow \sqrt{A} = \sqrt{\frac{256}{9}} = \frac{16}{3} \end{aligned}$$

