GUÍA DE EJERCICIOS - CLASE 2

III) d.1.1)

a) $\frac{15}{20} = 0,75$

150 | 20
100 | 0,75
0

b) $\frac{3}{5} = 0,6$

30 | 5
0 | 0,6

c) $\frac{5}{11} = 0,\overline{45}$

50 | 11
60 | 0,454...
50
6

d) $\frac{4}{23} = 0,1739$

40 | 23
170 | 0,1739
90
210
3

II. d.1.2)

a) $1,\overline{2}$

$10x = 1,\overline{2} \cdot 10 \rightarrow x = 1,\overline{2} \rightarrow$

$10x = 12,\overline{2}$

$10x = 12,\overline{2}$
$-\ x = 1,\overline{2}$
$9x = 11$
$x = \frac{11}{9}$

b) $0,\overline{341}$

$1000x = 0,\overline{341} \cdot 1000$
$1000x = 341,\overline{341}$
$x = 0,\overline{341} \rightarrow$

$1000x = 341,\overline{341}$
$-\ x = 0,\overline{341}$
$999x = 341$
$x = \frac{341}{999}$

c) $0,5\overline{3}$

$100x = 0,5\overline{3} \cdot 100$
$100x = 53,\overline{3}$
$10x = 0,5\overline{3} \cdot 10 \rightarrow$
$10x = 5,\overline{3}$

$100x = 53,\overline{3}$
$-\ 10x = 5,\overline{3}$
$90x = 48$
$x = \frac{48}{90} \rightarrow \frac{24}{45} \rightarrow \frac{8}{15} = x$

d) $3,100\overline{1}$

$10000x = 3,100\overline{1} \cdot 10000$
$10000x = 31001,\overline{01}$
$100x = 3,100\overline{1} \cdot 100 \rightarrow$
$100x = 310,\overline{01}$

$10000x = 31001,\overline{01}$
$-\ 100x = 310,\overline{01}$
$9900x = 30691$
$x = \frac{30691}{9900}$

e) $12,9$

$\frac{12,9}{1} \cdot \frac{10}{10} = \frac{129}{10} = x$

f) $36,\overline{36}$

$100x = 36,\overline{36} \cdot 100$
$100x = 3636,\overline{36}$
$x = 36,\overline{36} \rightarrow$

$100x = 3636,\overline{36}$
$-\ x = 36,\overline{36}$
$99x = 3600$
$x = \frac{3600}{99} \rightarrow \frac{400}{11} = x$

g) $0,7\overline{6}$ $\quad 100x = 0,7\overline{6} \cdot 100$

$100x = 76,7\overline{6}$

$x = 0,7\overline{6}$

$$\begin{array}{r} 100x = 76,7\overline{6} \\ -\ x = 0,7\overline{6} \\ \hline 99x = 76 \end{array}$$

$$\boxed{x = \frac{76}{99}}$$

II. d.1.3)

a) $\dfrac{0,\overline{2} + 1,\overline{1}}{0,\overline{6}} - 0,5$

$\dfrac{\frac{2}{9} + \frac{10}{9}}{\frac{2}{3}} - 0,5$

$\left(\frac{4}{3} \cdot \frac{3}{2}\right) - 0,5$

$2 - 0,5 = \frac{1,5}{1} \cdot \frac{10}{10} = \frac{15}{10}$ $\boxed{\frac{3}{2}}$

$0,\overline{2}$: $10x = 0,\overline{2} \cdot 10$, $10x = 2,\overline{2}$, $x = 0,\overline{2}$

$$\begin{array}{r} 10x = 2,\overline{2} \\ -\ x = 0,\overline{2} \\ \hline 9x = 2 \end{array}$$

$$x = \frac{2}{9}$$

$1,\overline{1}$: $10x = 1,\overline{1} \cdot 10$, $10x = 11,\overline{1}$, $x = 1,\overline{1}$

$$\begin{array}{r} 10x = 11,\overline{1} \\ -\ x = 1,\overline{1} \\ \hline 9x = 10 \end{array}$$

$$x = \frac{10}{9}$$

$0,\overline{6}$: $10x = 0,\overline{6} \cdot 10$, $10x = 6,\overline{6}$, $x = 0,\overline{6}$

$$\begin{array}{r} 10x = 6,\overline{6} \\ -\ x = 0,\overline{6} \\ \hline 9x = 6 \end{array}$$

$$x = \frac{6}{9} \quad \frac{2}{3}$$

$\left(\frac{2}{9} + \frac{10}{9}\right) \cdot \frac{2+10}{9} = \frac{12}{9} \quad \frac{4}{3}$

b) $\dfrac{(0,1\overline{2} + 0,\overline{1})^2}{0,00\overline{7}}$

$\frac{11}{90} + \frac{1}{9} = \frac{11+10}{90}$ $\quad \frac{\left(\frac{21}{90}\right)^2}{\frac{7}{900}}$

$\frac{\cancel{49}}{\cancel{900}} \cdot \frac{\cancel{900}}{\cancel{7}} = \boxed{7}$

$0,1\overline{2}$: $100x = 0,1\overline{2} \cdot 100$, $100x = 12,\overline{2}$, $10x = 0,1\overline{2} \cdot 10$, $10x = 1,\overline{2}$

$$\begin{array}{r} 100x = 12,\overline{2} \\ -\ 10x = 1,\overline{2} \\ \hline 90x = 11 \end{array}$$

$$x = \frac{11}{90}$$

$0,\overline{1}$: $10x = 0,\overline{1} \cdot 10$, $10x = 1,\overline{1}$, $x = 0,\overline{1}$

$$\begin{array}{r} 10x = 1,\overline{1} \\ -\ x = 0,\overline{1} \\ \hline 9x = 1 \end{array}$$

$$x = \frac{1}{9}$$

$0,00\overline{7}$: $1000x = 0,00\overline{7} \cdot 1000$, $1000x = 7,\overline{7}$, $100x = 0,00\overline{7} \cdot 100$, $100x = 0,\overline{7}$

$$\begin{array}{r} 1000x = 7,\overline{7} \\ -\ 100x = 0,\overline{7} \\ \hline 900x = 7 \end{array}$$

$$x = \frac{7}{900}$$

c) $\dfrac{\left(0,5\overline{4}+\frac{3}{5}\right)^2}{0,10\overline{8}}$

$\dfrac{\left(\frac{49}{90}+\frac{3}{5}\right)^2}{\frac{49}{450}}$

$\dfrac{\left(\frac{103}{90}\right)^2}{\frac{49}{450}} = \dfrac{10609}{8100} \cdot \dfrac{450}{1}$

$\dfrac{10609}{8100} \cdot \dfrac{450}{49} = \boxed{\dfrac{10609}{882}}$

$0,5\overline{4}$

$100x = 0,5\overline{4} \cdot 100$

$100x = 54,\overline{4}$

$10x = 0,5\overline{4} \cdot 10$

$10x = 5,\overline{4}$

$100x = 54,\overline{4}$

$-\ 10x = 5,\overline{4}$

$90x = 49$

$x = \dfrac{49}{90}$

$0,10\overline{8}$

$1000x = 0,10\overline{8} \cdot 1000$

$1000x = 108,\overline{8}$

$100x = 0,10\overline{8} \cdot 100$

$100x = 10,\overline{8}$

$1000x = 108,\overline{8}$

$-\ 100x = 10,\overline{8}$

$900x = 98$

$x = \dfrac{98}{900}$

$\dfrac{49}{450}$

$\dfrac{49}{90} + \dfrac{3}{5} = \dfrac{49 + 54}{90} = \dfrac{103}{90}$

II, d. 1.4)

a) $\dfrac{2}{3} + \dfrac{4}{7} - \dfrac{9}{5} = \dfrac{70 + 60 - 189}{105} = \boxed{\dfrac{-59}{105}}$

b) $\dfrac{11}{2} + \dfrac{3}{5} \quad \dfrac{55 + 6}{10} = \boxed{\dfrac{61}{10}}$

c) $\dfrac{11}{2} : \dfrac{6}{7} = \dfrac{11}{2} \cdot \dfrac{7}{6} = \boxed{\dfrac{77}{12}}$

d) $-\dfrac{4}{5} \cdot \left(\dfrac{7}{3} + \dfrac{5}{4}\right) \quad \dfrac{7}{3} + \dfrac{5}{4} \quad \dfrac{28 + 15}{12} = \dfrac{43}{12}$

$-\dfrac{4}{5} \cdot \dfrac{43}{12} = -\dfrac{172}{60} \quad \dfrac{86}{30} \quad \boxed{-\dfrac{43}{15}}$

e) $-\dfrac{3}{4}\left[\dfrac{4}{3}\left(\dfrac{1}{2} - \dfrac{1}{3}\right) + \dfrac{2}{7}\right]$

$-\dfrac{3}{4}\left[\dfrac{4}{3} \cdot \dfrac{1}{6} + \dfrac{2}{7}\right]$

$-\dfrac{3}{4}\left[\dfrac{4^2}{18_9} + \dfrac{2}{7}\right]$

$-\dfrac{\cancel{3}}{4} \cdot \dfrac{32^8}{\cancel{63}21} = \boxed{-\dfrac{8}{21}}$

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

$\dfrac{2}{9} + \dfrac{2}{7} = \dfrac{14 + 18}{63} = \dfrac{32}{63}$

f) $\dfrac{\frac{11}{27} - \frac{3}{4}}{\frac{11}{29} + \frac{8}{3}} - \dfrac{14}{3}\left(1 - \dfrac{2}{3}\right)$

$-\dfrac{37}{108} \cdot \dfrac{87}{265} - \dfrac{14}{3} \cdot \dfrac{1}{3}$

$\dfrac{11}{27} - \dfrac{3}{4} = \dfrac{44 - 81}{108} = \dfrac{-37}{108}$

$\dfrac{11}{29} + \dfrac{8}{3} = \dfrac{33 + 232}{87} = \dfrac{265}{87}$

$1 - \dfrac{2}{3} = \dfrac{3 - 2}{3} = \dfrac{1}{3}$

$\dfrac{3219}{28620} - \dfrac{14}{9} = -\dfrac{3219 - 44520}{28620} = -\dfrac{47739}{28620} \overset{:3}{=} \boxed{-\dfrac{15913}{9540}}$

g) $8 - \dfrac{\frac{2}{5} - \frac{1}{9}}{\frac{7}{6}} + \dfrac{1}{21}\left(\dfrac{9}{4} - \dfrac{2}{5}\right)$

$\dfrac{2}{5} - \dfrac{1}{9} = \dfrac{18-5}{45} = \dfrac{13}{45}$

$\dfrac{9}{4} - \dfrac{2}{5} = \dfrac{45-8}{20} = \dfrac{37}{20}$

$8 - \dfrac{13}{45} \cdot \dfrac{6}{7} + \dfrac{1}{21} \cdot \dfrac{37}{20}$

$\dfrac{8}{1} - \dfrac{\cancel{78}^{26}}{\cancel{315}_{105}} + \dfrac{37}{420} = \dfrac{3360 - 104 + 37}{420} = \boxed{\dfrac{3293}{420}}$