a) $\frac{2}{3}+\frac{1}{3}.\left(\frac{-4}{9}+\frac{5}{6}\right):\frac{7}{12}$ f) $(-3,2).\frac{-15}{64}+\left(0,8-2\frac{4}{15}\right):3\frac{2}{3}$; k) $(-2)^3.\left(\frac{3}{4}-0,25\right):\left(2\frac{1}{4}-1\frac{1}{6}\right)$

b) $\frac{2}{5}+\frac{3}{5}:\left(\frac{3}{5}+\frac{-2}{3}\right)-3\frac{1}{2}$ g) $19\frac{5}{8}:\frac{7}{12}-15\frac{1}{4}:\frac{7}{12}$ m) $\left(\frac{2}{5}\right)^2+5\frac{1}{2}.(4,5-2)+\frac{2^3}{(-4)}$

c) $\left(4-\frac{5}{12}\right):3+\frac{7}{36}$ f) h) $\frac{2}{5}.\frac{1}{3}-\frac{2}{15}:\frac{1}{5}+\frac{3}{5}.\frac{1}{3}$ n) $\left(-\frac{1}{2}\right)^2:\frac{1}{4}-2\left(-\frac{1}{2}\right)^2$

d) $\left(2+\frac{5}{6}\right):1\frac{1}{5}+\frac{-7}{12}$ i) $\left(3\frac{1}{3}+2,5\right):\left(3\frac{1}{6}-4\frac{1}{5}\right)-\frac{11}{31}$ p) $125\%.\left(\frac{-1}{2}\right)^2:\left(1\frac{5}{16}-1,5\right)+2008^0$

e) $\left(15-6\frac{13}{18}\right):11\frac{1}{27}-2\frac{1}{8}:1\frac{11}{40}$ j) $\left[6+\left(\frac{1}{2}\right)^3-\left|-\frac{1}{2}\right|\right]:\frac{3}{12}$ o) $(-2)^3.\frac{-1}{24}+\left(\frac{4}{3}-1\frac{5}{6}\right):\frac{5}{12}$

Bài 2: Tính hợp lý

a) $\frac{-7}{25}.\frac{39}{-14}.\frac{50}{78}$ g) $\frac{5}{9}.\frac{7}{13}+\frac{5}{9}.\frac{9}{13}-\frac{5}{9}.\frac{3}{13}$ m) $\frac{4}{2.4}+\frac{4}{4.6}+\frac{4}{6.8}+...+\frac{4}{2016.2018}$

b) $\frac{3}{8}.56.\frac{25}{7}.(-4)$ h) $\frac{-3}{5}.\frac{5}{7}+\frac{-3}{5}.\frac{3}{7}+\frac{-3}{5}.\frac{6}{7}$ n) $\frac{1}{18}+\frac{1}{54}+\frac{1}{108}+...+\frac{1}{990}$

c) $6\frac{4}{5}-\left(1\frac{2}{3}+3\frac{4}{5}\right)$

i) $\frac{-7}{11}.\frac{4}{9}+\frac{-7}{9}.\frac{7}{11}+5\frac{7}{9}$

p) $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+\frac{1}{32}+\frac{1}{64}$

d) $\left(7\frac{4}{9}+4\frac{7}{11}\right)-3\frac{4}{9}$

k) $50\%.1\frac{1}{3}.10.\frac{7}{35}.0,75$

q) $\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+...+\frac{1}{2^{2011}}$

e) $\frac{4}{19}.\frac{-3}{7}+\frac{-3}{7}.\frac{15}{19}+\frac{5}{7}$

l) $\frac{3}{1.4}+\frac{3}{4.7}+\frac{3}{7.10}+...+\frac{3}{40.43}$

Bài 3: Tính giá trị biểu thức

a) $\dfrac{\frac{5}{7}+\frac{5}{9}-\frac{5}{11}}{\frac{15}{7}+\frac{5}{9}-\frac{15}{11}}$

c) $\dfrac{\frac{5}{22}+\frac{3}{13}-\frac{1}{2}}{\frac{4}{13}-\frac{2}{11}+\frac{3}{2}}$

e) $\dfrac{\frac{3}{4}+\frac{3}{7}-\frac{3}{8}}{\frac{5}{4}+\frac{5}{7}-\frac{5}{8}}+1$

b) $\dfrac{4+\frac{7}{73}-\frac{4}{115}}{5+\frac{5}{73}-\frac{1}{23}}$

d) $\dfrac{\frac{2}{3}+\frac{2}{5}-\frac{2}{9}}{\frac{4}{3}+\frac{4}{5}-\frac{4}{9}}$

Bài 4: Tìm x, biết

a) $\frac{1}{3}+\frac{2}{3}:x=-7$

h) $\frac{1}{3}x+\frac{2}{5}(x-1)=0$

o) $\left(x+\frac{3}{5}\right)^2+1\frac{16}{25}=9\%:4,5\%$

b) $8\frac{2}{3}:x-10=-8$

i) $(2x-3)\left(16-4x^2\right)=0$

p) $\frac{1}{4}+\frac{1}{3}:(2x-1)=-5$

c) $x+30\%x=-1,3$

j) $\frac{-2}{3}-\frac{1}{3}(2x-5)=\frac{3}{2}$

q) $3\left(3x-\frac{1}{2}\right)^3+\frac{1}{9}=0$

d) $3\frac{1}{3}x+16\frac{3}{4}=-13,25$

$60\%x+\frac{2}{3}x=\frac{1}{3}.6\frac{1}{3}$

e) $\left(2\frac{4}{5}x-50\right):\frac{2}{3}=51$

$\left|x-2\frac{1}{4}\right|.\left(-\frac{2}{3}\right).50\%=-2\frac{5}{6}$

f) $|2x-1|=(-4)^2$

$3\left(x-\frac{1}{2}\right)-5\left(x+\frac{3}{5}\right)=-x+\frac{1}{5}$

g) $3\frac{1}{2}-\frac{1}{2}x=\frac{2}{3}$

$-\frac{5}{6}\left|\frac{3}{8}-x\right|-\left(\frac{-7}{8}+\frac{11}{12}-\frac{5}{6}\right)=-(-1)^{2017}$

k) $2\left|\frac{1}{2}x-\frac{1}{3}\right|-\frac{3}{2}=\frac{1}{4}$

l) $\frac{3}{4}-2\left|2x-\frac{2}{3}\right|=2$

m) $\left(-0,6x-\frac{1}{2}\right).\frac{3}{4}-(-1)=\frac{1}{3}$

n) $(3x-1)\left(-\frac{1}{2}x+5\right)=0$

r)

s)

t)

u)

Bài 5: Tìm x nguyên để các phân số sau là số nguyên

a) $\frac{-4}{x-1}$ b) $\frac{3x+3}{x-1}$ c) $\frac{4x-1}{3-x}$ d) $\frac{x^2-3x+2}{x^2+2}$

Một số dạng bài tập nâng cao

Bài 1: Chứng tỏ rằng

$A=\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+...+\frac{1}{63}>2$

$B=1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+...+\frac{1}{100^2}<2$

$C=1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+...+\frac{1}{63}<6$

$D=\frac{1}{2}.\frac{3}{4}.\frac{5}{6}....\frac{9999}{10000}<\frac{1}{100}$

$E=\frac{1}{31}+\frac{1}{32}+\frac{1}{34}+...+\frac{1}{60}.CMR:\frac{3}{5}<E<\frac{4}{5}$

$F=\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+...+\frac{1}{9^2}.CMR:\frac{2}{5}<F<\frac{8}{9}$

Bài 2: Cho $S=\frac{1}{11}+\frac{1}{12}+\frac{1}{13}+\frac{1}{14}+\frac{1}{15}+\frac{1}{16}+\frac{1}{17}+\frac{1}{18}+\frac{1}{19}+\frac{1}{20}$. Hãy so sánh S và $\frac{1}{2}$

Bài 3: Tìm n để $\frac{2}{1.3}+\frac{2}{3.5}+\frac{2}{5.7}+...+\frac{2}{n(n+2)}<\frac{2003}{2004}$

Bài 4: Chứng minh các phân số sau là phân số tối giản

a) $A=\frac{12n+1}{30n+2}$ b) $B=\frac{14n+17}{21n+25}$

Bài 5: Tìm x nguyên để các biểu thức sau đạt giá trị nhỏ nhất

a) $A=(x-3)^2+2018$ b) $B=|x-5|+2016$ c) $C=\frac{7}{x-3}$ d) $D=\frac{x+8}{x-5}$

Bài 6: Tìm x nguyên để các biểu thức sau đạt giá trị lớn nhất

a) $M=2003-(x+1)^{2018}$ b) $N=21-|5-x|$ c) $P=\frac{2009}{(x-4)^2+7}$ d) $Q=\frac{5}{|x-3|+1}$