2022/23 Remédiation 1

ex 1 :

1. $\frac{3}{12}+\frac{5}{12}=\frac{8}{12}=\boxed{\frac{2}{3}}$ , $\frac{2}{3}+\frac{5}{6}=\frac{4}{6}+\frac{5}{6}=\frac{9}{6}=\boxed{\frac{3}{2}}$

~~$\frac{\frac{1}{3}}{\frac{1}{6}}+\frac{\frac{1}{4}}{\frac{1}{6}}=\frac{3}{5}+\frac{4}{6}=\frac{3\times6+4\times5}{30}=\frac{38}{30}=\frac{19}{15}$~~

$\frac{\frac{1}{3}}{\frac{1}{6}}+\frac{\frac{1}{4}}{\frac{1}{6}}=\frac{3}{5}+\frac{6}{4}=\frac{3}{5}+\frac{3}{2}$

$=\frac{3\times2+3\times5}{10}$

$=\boxed{\frac{21}{10}}$

2. $\frac{\frac{2}{3}}{8}=\frac{2}{3}\times\frac{1}{8}=\frac{1}{3}\times\frac{1}{4}=\boxed{\frac{1}{12}}$ , $\frac{2}{\frac{4}{3}}=2\times\frac{3}{4}=\boxed{\frac{3}{2}}$

$\frac{\frac{7}{5}}{\frac{7}{3}}=\frac{7}{5}\times\frac{3}{7}=\boxed{\frac{3}{5}}$

3. $\frac{4\times6\times9}{5\times8\times3}=\frac{4\times2\times3\times9}{5\times8\times3}=\boxed{\frac{9}{5}}$ , $5\times\frac{2+3}{20}=\frac{2+3}{4}=\boxed{\frac{5}{4}}$

$\frac{3*4+3\times7}{24}=\frac{3\times(4+7)}{3\times8}=\boxed{\frac{11}{8}}$

ex 2

1. $\frac{1}{240}+\frac{1}{360}=\frac{1}{10\times12\times2}+\frac{1}{10\times12\times3}=\frac{3}{10\times12\times2\times3}+\frac{2}{10\times12\times2\times3}$

$=\frac{5}{5\times2\times12\times2\times3}=\frac{1}{2\times12\times2\times3}=\boxed{\frac{1}{144}}$

2. $\frac{1}{2^3\times3^2\times5^2}+\frac{1}{2^4\times3\times5^3}=\frac{2\times5}{2^4\times3^2\times5^3}+\frac{3}{2^4\times3^2\times5^3}=\boxed{\frac{13}{2^4\times3^2\times5^3}}$

3. $\frac{1}{x^2y^2}+\frac{1}{xy^3}=\frac{y}{x^2y^3}+\frac{x}{x^2y^3}=\boxed{\frac{x+y}{x^2y^3}}$

4. $\frac{x+y}{xy^4}-\frac{x-y}{x^2y}=\frac{x(x+y)}{x^2y^4}-\frac{y^3(x-y)}{x^2y^4}=\boxed{\frac{x^2+xy-xy^3+y^4}{x^2y^4}}$

ex 3

1. $2+\frac{2+x}{3-x}=\frac{2(3-x)}{3-x}+\frac{2+x}{3-x}=\frac{6-2x+2+x}{3-x}=\boxed{\frac{8-x}{3-x}}$

2. $3-\frac{2-x}{1+x}=\frac{3(1+x)-(2-x)}{1+x}=\frac{3+3x-2+x}{1+x}=\boxed{\frac{1+4x}{1+x}}$

3. $\frac{x}{\frac{1}{x}+\frac{1}{y}}=\frac{x\times xy}{(\frac{1}{x}+\frac{1}{y})\times xy}=\frac{x^2y}{\frac{1}{x}\times xy+\frac{1}{y}\times xy}=\boxed{\frac{x^2y}{y+x}}$

4. $\frac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{x}-\frac{1}{y}}=\frac{xy(\frac{1}{x}+\frac{1}{y})}{xy(\frac{1}{x}-\frac{1}{y})}=\boxed{\frac{y+x}{y-x}}$

5. $\frac{1}{1-\frac{1}{2+x}}=\frac{1}{\frac{2+x-1}{2+x}}=\boxed{\frac{2+x}{1+x}}$

6. $\frac{1}{\frac{1}{x}-\frac{2+x}{1+\frac{1}{x}}}=\frac{1}{\frac{1}{x}-\frac{x(2+x)}{x(1+\frac{1}{x})}}=\frac{1}{\frac{1}{x}-\frac{2x+x^2}{x+1}}=\frac{1}{\frac{x+1}{x(x+1)}-\frac{x(2x+x^2)}{x(x+1)}}$

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

exo 4 :

1) $\sqrt{b}(2a\sqrt{b})^3 - (-\sqrt{8ab})^2 = \sqrt{b}^4 8a^3 - 8ab^2 = 8ab^2(a^2-1)$

2) $\dfrac{(a^2b)^3(a^{-1}b)^{-2}}{a^3b^{-2}} = \dfrac{a^6b^3a^2b^{-2}}{a^3b^{-2}} = a^{6+2-3}b^3 = a^5b^3$

3) $\dfrac{(a\sqrt{b})^4(\sqrt{a}\,b)^{-2}}{ab^2} = \dfrac{a^4\sqrt{b}^4\sqrt{a}^{-2}b^{-2}}{ab^2} = \dfrac{a^4(b^{\frac{1}{2}})^4(a^{1/2})^{-2}b^{-2}}{ab^2}$

$= \dfrac{a^4b^2a^{-1}b^{-2}}{ab^2} = a^{4-1-1}b^{-2} = a^2b^{-2}$

4) $\left(\dfrac{a^3}{b^2}\right)^3 \times \left(\dfrac{b^3}{a^2}\right)^{-2} = \dfrac{a^9}{b^6} \times \dfrac{b^{-6}}{a^{-4}} = a^{13}b^{-12}$