CALCULS 1.1

I) Fractions :

$A = \frac{4}{5}-\frac{2}{5}\left(\frac{1}{3}-3\right)$

$B = \frac{2}{a}-\frac{7}{5}\times\frac{1}{\frac{a}{4}-\frac{a}{2}}$

$C = \frac{\frac{3}{2}-1}{1{,}5+1}\times\frac{5^3}{18}$

$D = a^{-2}+\frac{\left(\frac{1}{2a}+\frac{1}{a}\right)^2}{\frac{5}{4}}$

$E = \frac{\frac{7}{6}-\frac{a}{3}}{1-\frac{4a}{14}}\times\frac{a^2}{7}$

$F = \frac{2+3}{2+7}\div\left(\frac{5}{3}\right)^2$

$G = \frac{7}{18}\times\frac{2}{7}-\left(\frac{5}{3}-1\right)^2+1$

$H = \left(\frac{2}{5}-\frac{3}{4}\right)^2\div\frac{5}{8}-\frac{8}{3}$

$I = \frac{a}{3}-\frac{a}{3}\times\frac{7}{21}-\frac{7}{21}$

$J = \frac{\frac{3}{4}-\frac{2}{3}}{\frac{3}{4}+\frac{2}{3}}\div\frac{\frac{4}{5}-\frac{3}{4}}{\frac{4}{5}+\frac{3}{4}}$

$K = \frac{a+\frac{a}{3}-\frac{a}{2}}{2a+\frac{3a}{4}+\frac{a}{3}}$

$L = \frac{-5+3^2\times2+4}{12\times2+10}$

$M = \frac{2}{a+1}+\frac{1-\frac{1}{a}}{1+\frac{1}{a}}$

II) Puissances :

$A = \frac{49\times(-2)^5\times(-3)^{-2}}{-7^3\times16\times3^{-3}}$

$B = \frac{(-5)^4\times7^2\times(-2)^{-3}}{(-4)^4\times(-1)^5\times25}$

$C = 0{,}0000000005\times1004000000$

$D = \frac{2^3}{3^4}\div\frac{2^2}{3^5}$

$E = \left(\frac{4^{-2}\times8^4}{90^7\times30^{-2}}\right)^3$

$F = \left(\frac{5^5\times24^{-3}}{(100^{-7}\times15^6)^4}\right)^2$

$G = \frac{2^2\times10^{-10}\times2^7\times10^{-6}}{32\times10^{-15}}$

$H = \frac{5^3\times3^8\times5^2}{125\times5^2\times81\times7^0}$

$I = \frac{0{,}9\times7\times10^{-1}\times250}{14\times10^3\times0{,}5\times10^{-2}}$

$J = \frac{(56^8\times81^{-2}\times25^7)^3}{(50^5\times700^3)^4}$

$K = \frac{0{,}04\times2^{-2}\times(10^{-2})^3\times10^2}{3\times10^{-8}\times10^{-2}}$

$L = \frac{25\times(10^2)^{-5}\times121}{11\times75\times10^{-9}}$

$M = \frac{9^{n+1}+9^n}{3^{2n+1}-3^{2n}}$ $(n\in\mathbb{N})$

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

$O = \frac{(a^2b)^3}{(-a)(-b)^2}$

$P = \left(\frac{a^3b^{-2}}{a^4b^{-3}}\right)^{-2}\times\frac{(3a^2b^3)^3}{(2^{-1}ab)^2}$

$Q = \frac{(ab^2)^2(ab^{-1})^3(a^2b)^{-2}}{a^2c^{-5}(a^{-1}bc^2)^3}$

$R = \frac{(ab^{-2}c^3)^4(a^4b^5c^{-6})^{-2}}{(a^{-7}b^8c^7)^3(a^6b^5c^4)^2}$

III) Racines :

$A = \sqrt{2}+3\sqrt{8}-6\sqrt{50}$

$B = \sqrt{2}+\sqrt{\frac{1}{2}}-\sqrt{\frac{1}{8}}$

$C = \frac{\sqrt{3}}{\sqrt{3}-2}$

$D = \frac{2\sqrt{21}\sqrt{75a^2}}{\sqrt{35}\sqrt{20}}$

$E = \left(\frac{\sqrt{10-2\sqrt{5}}}{4}\right)^2+\left(\frac{1+\sqrt{5}}{4}\right)^2$

$F = (\sqrt{2}+\sqrt{7})^3$

$G = (2a+\sqrt{b})^2+(1-2a\sqrt{b})^2-(2a\sqrt{b})^2$

$H = \frac{\sqrt{3}}{\sqrt{3}-\frac{2}{\sqrt{3}-\frac{2}{\sqrt{3}}}}$

$I = \frac{3\sqrt{5}+\sqrt{20}}{\sqrt{45}\left(2-\frac{5}{6}+\frac{4}{3}\right)(1-\sqrt{3})}$

$J = (4+3\sqrt{2})^2-(2+\sqrt{2})(\sqrt{2}-1)$

$K = \sqrt{\frac{7+4\sqrt{3}}{7-4\sqrt{3}}}+\sqrt{\frac{7-4\sqrt{3}}{7+4\sqrt{3}}}$

$L = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}+\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$

$M = \frac{\sqrt{0{,}04}}{\sqrt{0{,}0016}}+\frac{\sqrt{0{,}01}}{\sqrt{0{,}04}}$

$N = (\sqrt{2-\sqrt{2}}+\sqrt{2+\sqrt{2}})^2$

$O = \sqrt{\frac{a^6+a^6+a^6+a^6}{5^2+5^2+5^2+5^2}}$

$P = \sqrt{6-\sqrt{6-\sqrt{6-\sqrt{6-\sqrt{\frac{4\sqrt{27}}{3\sqrt{3}}}}}}}$

$Q = \sqrt{\frac{48a^6b^{12}}{243(ab)^4}}$

$R = \sqrt{\frac{4^{80}+5\times8^{53}}{28\times2^{155}}}$

$S = (\sqrt{1+\sqrt{1-a^2}}+\sqrt{1-\sqrt{1-a^2}})^2$ $(a\in[0\,;1])$

IV) Factorisations :

$A = x^2-9-(2x-6)x+(x-3)^2$

$B = (x-11)^2+(33-3x)(x+2)$

$C = (x^4-1)(x^2+2x+1)$

$D = -0{,}3(2x-3)^2+0{,}7x(1{,}5-x)$

$E = 0{,}25x^2-x+1$

$F = x^2-3x+2$

$G = -9x^2-6x-1$

$H = -10+(x+5)^2-2x$

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

$J = x^2+2\sqrt{2}x+2$

$K = x^2-2$

$L = 4x^2-12x+8$

$M = x-(3x-1)^3+2x-1$

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

$O = x^2\left(1+\frac{1}{x}\right)+2(x+1)^2$

$P = x^2-(x+1)^2$

$Q = 5(1-x)^2-45x^2$

$R = (x+1)^2-2(x+1)+1$

$S = x^5+4x^4+4x^3$

$T = (5x-1)(x+3)+3(25x^2-1)$

$U = 49-28x+4x^2+(7-2x)(5-3x)$

$V = x^2(x-4)+2x(x-4)+x-4$

$W = x^2+6x+5$

$X = 3x^2+7x+2$

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

$Z = 2x^2-3x+1$

V) Équations :

(H) : $x^2-\frac{1}{4}=\frac{-3}{16}$

(I) : $(x-5)(x+1)-(1-x^2)=0$

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

(K) : $2x^2-x-1=0$

(L) : $x\sqrt{2}-\frac{1}{\sqrt{2}}+x(2x-1)=0$