

SIMPLIFIER DES FRACTIONS, DES PUISSANCES ET DES RACINES

I) Fractions

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

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

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

$$D = \frac{2}{3} - \frac{7}{3} \times \frac{1}{3 - \frac{3}{2}}$$

$$E = \frac{\frac{7}{4} - \frac{1}{3}}{\frac{5}{-2}} \times \frac{81}{50}$$

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

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

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

$$I = \frac{2}{3} - \frac{2}{3} \times \frac{5}{14} - 2 \times \frac{4}{14}$$

$$J = \frac{1 - \frac{1}{3}}{5 + \frac{1}{3}} \times \frac{\frac{1}{4} - 3}{2}$$

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

$$L = \frac{1 + \frac{1}{3} - \frac{1}{2}}{2 + \frac{3}{4} + \frac{1}{3}}$$

$$M = \frac{-5 + 3^2 \times 2 + 4}{12 \times 2 + 10}$$

$$N = \frac{2}{a+1} + \frac{1 - \frac{1}{a}}{1 + \frac{1}{a}} \quad \begin{matrix} (a \neq 0) \\ (a \neq -1) \end{matrix}$$

II) Puissances

$$A = \frac{49 \times (-2)^5 \times (-3)^{-2}}{-7^3 \times 16 \times 3^{-3}}$$

$$B = \frac{(-5)^4 \times 7^2 \times (-2)^{-3}}{(-4)^4 \times (-1)^5 \times 25}$$

$$C = 0,0000000005 \times 1004000000$$

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

$$E = \left(\frac{4^{-2} \times 8^4}{90^7 \times 30^{-2}} \right)^3$$

$$F = \left[\frac{5^5 \times 24^{-3}}{(100^{-7} \times 15^6)^4} \right]^2$$

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

$$H = \frac{5^3 \times 3^8 \times 5^2}{125 \times 5^2 \times 81 \times 7^0}$$

$$I = \frac{0,09 \times 7 \times 10^{-1} \times 250}{14 \times 10^3 \times 0,5 \times 10^{-2}}$$

$$J = \frac{(56^8 \times 81^{-2} \times 25^7)^3}{(50^5 \times 700^3)^4}$$

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

$$L = \frac{25 \times (10^2)^{-5} \times 121}{11 \times 75 \times 10^{-9}}$$

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

$$N = \left[\frac{(a^2 b^4)^2}{a^3} \right]^{-3} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \end{matrix}$$

$$O = \frac{(a^2 b)^3}{(-a)(-b)^2} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \end{matrix}$$

$$P = \left(\frac{a^3 b^{-2}}{a^4 b^{-3}} \right)^{-2} \times \frac{(3a^2 b^3)^3}{(2^{-1} ab)^2} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \end{matrix}$$

$$Q = \frac{(ab^2)^2 (ab^{-1})^3 (a^2 b)^{-2}}{a^2 c^{-5} (a^{-1} b c^2)^3} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \\ (c \neq 0) \end{matrix}$$

$$R = \frac{(ab^{-2} c^3)^4 (a^4 b^5 c^{-6})^{-2}}{(a^{-7} b^8 c^7)^3 (a^6 b^5 c^4)^2} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \\ (c \neq 0) \end{matrix}$$

III) Racines

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

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

$$C = \frac{2\sqrt{21}\sqrt{75}}{\sqrt{35}\sqrt{20}}$$

$$D = \frac{\sqrt{3}}{\sqrt{3}-1} - \frac{\sqrt{3}+1}{\sqrt{3}+2}$$

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

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

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

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

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

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

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

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

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

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

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

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

$$Q = \sqrt{\frac{48a^6 b^{12}}{243(ab)^4}} \quad \begin{matrix} (a \neq 0) \\ (b \neq 0) \end{matrix}$$

$$R = \sqrt{\frac{4^{80} + 5 \times 8^{53}}{28 \times 2^{155}}}$$

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