

Simplification de racines

Simplifier les expressions suivantes

$$A = \sqrt{29400}$$

$$B = \sqrt{2772}$$

$$C = \sqrt{52272}$$

$$= 3 \times 5 \times 4\sqrt{7}$$

$$= 3 \times 3\sqrt{70}$$

$$= 17\sqrt{15}$$

$$D = \sqrt{75}\sqrt{336}$$

$$E = \sqrt{450}\sqrt{63}$$

$$F = \sqrt{51}\sqrt{85}$$

$$G = \frac{45}{\sqrt{2}}$$

$$H = \frac{9}{2\sqrt{700}}$$

$$I = \frac{13\sqrt{5}}{8\sqrt{45}}$$

$$G = \frac{45}{\sqrt{2}}$$

$$H = \frac{9}{2\sqrt{700}}$$

$$I = \frac{13\sqrt{5}}{8\sqrt{45}}$$

$$= \frac{45\sqrt{2}}{\sqrt{2}\sqrt{2}}$$

$$= \frac{9\sqrt{700}}{2\sqrt{700}\sqrt{700}}$$

$$= \frac{13\sqrt{5}\sqrt{45}}{8\sqrt{45}\sqrt{45}}$$

$$J = \sqrt{\frac{1092}{616}}$$

$$K = \sqrt{\frac{1300}{175}}$$

$$L = \sqrt{\frac{308}{2520}}$$

$$= \frac{45\sqrt{2}}{2}$$

$$= \frac{9 \times 10\sqrt{7}}{2 \times 700}$$

$$= \frac{13\sqrt{5} \times 3\sqrt{5}}{8 \times 45}$$

$$M = \frac{7}{2-\sqrt{3}}$$

$$N = \frac{2\sqrt{7}}{5-\sqrt{5}}$$

$$O = \frac{7}{4+2\sqrt{2}}$$

$$= \frac{9\sqrt{7}}{14}$$

$$= \frac{13 \times 5 \times 3}{8 \times 3 \times 5 \times 3}$$

$$P = \frac{5-\sqrt{2}}{13+\sqrt{242}}$$

$$Q = \frac{4+\sqrt{31}}{25+\sqrt{620}}$$

$$R = \frac{\sqrt{7}-\sqrt{2}}{5-\sqrt{14}}$$

$$J = \sqrt{\frac{1092}{616}}$$

$$K = \sqrt{\frac{1300}{175}}$$

$$L = \sqrt{\frac{308}{2520}}$$

$$S = \frac{\sqrt{15}-\sqrt{6}}{\sqrt{21}+\sqrt{12}}$$

$$= \sqrt{\frac{2^2 \times 3 \times 7 \times 13}{2^2 \times 2 \times 7 \times 11}}$$

$$= \sqrt{\frac{13 \times 10^2}{7 \times 5^2}}$$

$$= \sqrt{\frac{2^2 \times 7 \times 11}{2^2 \times 2 \times 5 \times 3^2 \times 7}}$$

Correction :

$$A = \sqrt{29400}$$

$$B = \sqrt{2772}$$

$$C = \sqrt{52272}$$

$$= \sqrt{\frac{3 \times 13}{2 \times 11}} = \frac{\sqrt{3 \times 13}}{\sqrt{2 \times 11}}$$

$$= \frac{10\sqrt{13}}{5\sqrt{7}}$$

$$= \sqrt{\frac{11}{2 \times 5 \times 3^2}} = \frac{\sqrt{11}}{3\sqrt{10}}$$

$$= \sqrt{10^2 \times 2 \times 3 \times 7^2}$$

$$= \sqrt{2^2 \times 3^2 \times 7 \times 11}$$

$$= \sqrt{4^2 \times 3^2 \times 3 \times 11^2}$$

$$= \frac{\sqrt{39}\sqrt{22}}{\sqrt{22}\sqrt{22}} = \frac{\sqrt{858}}{22}$$

$$= \frac{2\sqrt{13}\sqrt{7}}{\sqrt{7}\sqrt{7}} = \frac{2\sqrt{91}}{7}$$

$$= \frac{\sqrt{11}\sqrt{10}}{3\sqrt{10}\sqrt{10}} = \frac{\sqrt{110}}{30}$$

$$= 10 \times 7 \times \sqrt{6}$$

$$= 2 \times 3\sqrt{77}$$

$$= 4 \times 3 \times 11\sqrt{3}$$

$$M = \frac{7}{2-\sqrt{3}}$$

$$N = \frac{2\sqrt{7}}{5-\sqrt{5}}$$

$$O = \frac{7}{4+2\sqrt{2}}$$

$$= 70\sqrt{6}$$

$$= 6\sqrt{77}$$

$$= 12\sqrt{3}$$

$$= \frac{7(2+\sqrt{3})}{(2-\sqrt{3})(2+\sqrt{3})}$$

$$= \frac{2\sqrt{7}(5+\sqrt{5})}{(5-\sqrt{5})(5+\sqrt{5})}$$

$$= \frac{7(4-2\sqrt{2})}{(4+2\sqrt{2})(4-2\sqrt{2})}$$

$$D = \sqrt{75}\sqrt{336}$$

$$E = \sqrt{450}\sqrt{63}$$

$$F = \sqrt{51}\sqrt{85}$$

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

$$= \frac{2\sqrt{7}(5+\sqrt{5})}{5^2-\sqrt{5}^2}$$

$$= \frac{7(4-2\sqrt{2})}{4^2-(2\sqrt{2})^2}$$

$$= \sqrt{3 \times 5^2 \times 3 \times 4^2 \times 7}$$

$$= \sqrt{3^2 \times 2 \times 5 \times 3^2 \times 7}$$

$$= \sqrt{17 \times 3 \times 17 \times 5}$$

$$= \frac{14+7\sqrt{3}}{4-3}$$

$$= \frac{2\sqrt{7} \times 5 + 2\sqrt{7}\sqrt{5}}{25-5}$$

$$= \frac{7 \times 4 - 7 \times 2\sqrt{2}}{16-8}$$

$$= 14 + 7\sqrt{3} \qquad = \frac{10\sqrt{7}+2\sqrt{35}}{20} \qquad = \frac{28-14\sqrt{2}}{8}$$

$$\begin{aligned}
P &= \frac{5-\sqrt{2}}{13+\sqrt{242}} & Q &= \frac{4+\sqrt{31}}{25+\sqrt{620}} & R &= \frac{\sqrt{7}-\sqrt{2}}{5-\sqrt{14}} \\
&= \frac{(5-\sqrt{2})(13-\sqrt{242})}{(13+\sqrt{242})(13-\sqrt{242})} & &= \frac{(4+\sqrt{31})(25-\sqrt{620})}{(25+\sqrt{620})(25-\sqrt{620})} & &= \frac{(\sqrt{7}-\sqrt{2})(5+\sqrt{14})}{(5-\sqrt{14})(5+\sqrt{14})} \\
&= \frac{65-5\sqrt{242}-13\sqrt{2}+\sqrt{2}\sqrt{242}}{13^2-\sqrt{242}^2} & &= \frac{100-4\sqrt{620}+25\sqrt{31}-\sqrt{620}\sqrt{31}}{25^2-\sqrt{620}^2} & &= \frac{5\sqrt{7}+\sqrt{7}\sqrt{14}-5\sqrt{2}-\sqrt{14}\sqrt{2}}{(5^2-\sqrt{14}^2)} \\
&= \frac{65-5\sqrt{242}-13\sqrt{2}+\sqrt{2}\sqrt{242}}{169-242} & &= \frac{100-4\sqrt{31 \times 2^2 \times 5}+25\sqrt{31}-\sqrt{31^2 \times 10}}{625-620} & &= \frac{5\sqrt{7}+7\sqrt{2}-5\sqrt{2}-2\sqrt{7}}{(25-14)} \\
&= \frac{65-5 \times 11\sqrt{2}-13\sqrt{2}+\sqrt{11^2 \times 2^2}}{-73} & &= \frac{100-4\sqrt{31 \times 2^2 \times 5}+25\sqrt{31}-\sqrt{31^2 \times 10}}{5} & &= \frac{5\sqrt{7}+7\sqrt{2}-5\sqrt{2}-2\sqrt{7}}{11} \\
&= \frac{87-68\sqrt{2}}{-73} & &= \frac{100-4 \times 2\sqrt{31 \times 5}+25\sqrt{31}-\sqrt{31^2 \times 10}}{5} & &= \frac{3\sqrt{7}+2\sqrt{2}}{11} \\
& & &= \frac{100-8\sqrt{155}+25\sqrt{31}-31\sqrt{10}}{5} & &
\end{aligned}$$

$$\begin{aligned}
S &= \frac{\sqrt{15}-\sqrt{6}}{\sqrt{21}+\sqrt{12}} = \frac{(\sqrt{15}-\sqrt{6})(\sqrt{21}-\sqrt{12})}{(\sqrt{21}+\sqrt{12})(\sqrt{21}-\sqrt{12})} = \frac{\sqrt{15}\sqrt{21}-\sqrt{15}\sqrt{12}-\sqrt{6}\sqrt{21}+\sqrt{6}\sqrt{12}}{21-12} \\
&= \frac{\sqrt{3^2 \times 7 \times 5}-\sqrt{3 \times 5 \times 3 \times 2^2}-\sqrt{3 \times 2 \times 3 \times 7}+\sqrt{6^2 \times 2}}{9} = \frac{3\sqrt{35}-6\sqrt{5}-3\sqrt{14}+6\sqrt{2}}{9} = \frac{\sqrt{35}-2\sqrt{5}-\sqrt{14}+2\sqrt{2}}{3}
\end{aligned}$$