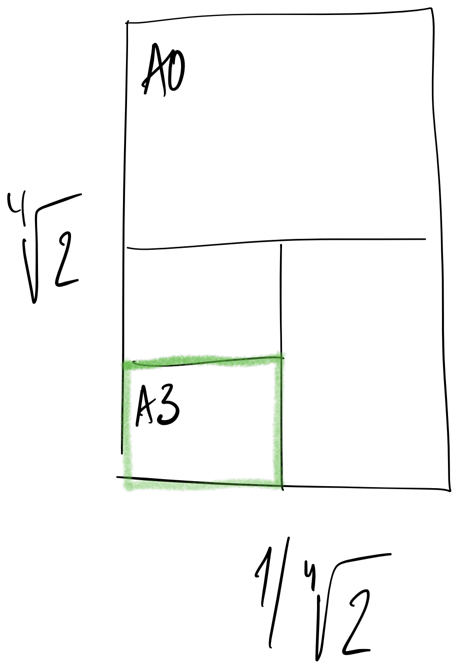


$$\frac{\sqrt[m]{a}}{\sqrt[m]{b}} = \sqrt[m]{\frac{a}{b}}$$

A0 : $\sqrt[4]{2} \Big/ \dfrac{1}{\sqrt[4]{2}}$

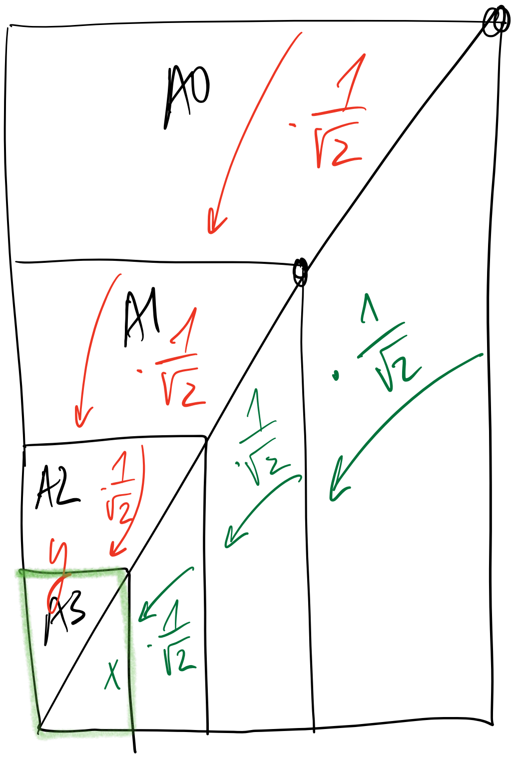
A1 : $\boxed{\dfrac{1}{\sqrt[4]{2}}} \Big/ \dfrac{\sqrt[4]{2}}{2} = \dfrac{\sqrt[4]{2}}{\sqrt[4]{16}} = \boxed{\dfrac{1}{\sqrt[4]{8}}}$

A2 : $\dfrac{1}{\sqrt[4]{8}} \Big/ \dfrac{1}{\sqrt[4]{2}} \cdot \dfrac{1}{2} = \dfrac{1}{\sqrt[4]{32}}$

A3 : $\dfrac{1}{\sqrt[4]{32}} \Big/ \dfrac{1}{\sqrt[4]{8 \cdot 16}} = \dfrac{1}{\sqrt[4]{128}}$

Les dimensions exactes, en mètres, du format A3 sont : $\dfrac{1}{\sqrt[4]{32}} \Big/ \dfrac{1}{\sqrt[4]{128}}$

Autre méthode



$$\sqrt[4]{2}\cdot\left(\frac{1}{\sqrt{2}}\right)^3 = \frac{\sqrt[4]{2}}{\sqrt{8}} = \frac{\sqrt[4]{2}}{\sqrt[4]{64}}$$

$$x = \frac{1}{\sqrt[4]{32}}$$

$$\frac{1}{\sqrt[4]{2}}\cdot\left(\frac{1}{\sqrt{2}}\right)^3 = \frac{1}{\sqrt[4]{2}\cdot\sqrt[4]{64}}$$

$$y = \frac{1}{\sqrt[4]{128}}$$

$\Rightarrow$ A3: $x = \frac{1}{\sqrt[4]{32}}$

$y = \frac{1}{\sqrt[4]{128}}$

$$\frac{x}{x-6} - \frac{1}{2} = \frac{x}{6} - \frac{x+6}{x-6}$$

$$a-b = -(b-a)$$

$$+\frac{x+6}{6-x} \qquad \cdot\, 6(x-6)$$

$x \neq 6$

$$\boxed{6x - 3(x-6) = x(x-6) - 6(x+6)}$$

$$+\frac{x+6}{6-x} = +\frac{x+6}{-(x-6)} = -\frac{x+6}{x-6}$$

$$\frac{\cancel{(x-6)}(6-x)\cdot x}{\cancel{x-6}} - \frac{(x-6)(6-x)}{2} = \frac{x(x-6)(6-x)}{6} - \frac{\cancel{(x-6)}(6-x)(x+6)}{\cancel{(x-6)}}$$

$$6x - x^2 - \frac{1}{2}\underbrace{(6x - x^2 - 36 + 6x)}_{(-x^2+12x-36)} = \frac{1}{6}(-x^3 + 12x^2 - 36x) - (36 - x^2)$$

$$6x - x^2 + \frac{1}{2}x^2 - 6x + 18 = -\frac{1}{6}x^3 + 2x^2 - 6x - 36 + x^2$$

$$\cancel{36x} - 6x^2 + 3x^2 - \cancel{36x} + 108 = -x^3 + 12x^2 - 36x - 216 + 6x^2$$

$$-\cancel{3x^2} + 108 = \cancel{-x^3} + \cancel{18x^2} - 36x - 216$$

$$x^3 - 21x^2 + 36x + 324 = 0$$

$$\begin{array}{c|cccc}
 & 1 & -21 & 36 & 324 \\
6 & & 6 & -90 & -324 \\
\hline
 & 1 & -15 & -54 & 0
\end{array}$$

$$(x-6)(x^2 - 15x - 54) = 0$$

$$(x-6)(x+3)(x-18) = 0$$

$$\cancel{x = 6}$$

$$\boxed{\begin{array}{c} x = -3 \\ x = 18 \end{array}}$$

$$\varphi = \frac{1+\sqrt{5}}{2}$$

$$\varphi+1 = \frac{1+\sqrt{5}}{2} + 1 = \frac{1+\sqrt{5}}{2} + \frac{2}{2}$$

$$= \frac{3+\sqrt{5}}{2}$$

$$\varphi^2 = \frac{(1+\sqrt{5})^2}{4} = \frac{1+2\sqrt{5}+(\sqrt{5})^2}{4}$$

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

$$= \frac{3+\sqrt{5}}{2} = \varphi+1$$

On a bien $\varphi^2 = \varphi+1 \Leftrightarrow \varphi = 1+\frac{1}{\varphi}$

D'ailleurs,

$$1+\frac{1}{\frac{1+\sqrt{5}}{2}} = 1+\frac{2}{1+\sqrt{5}}$$

$$= \frac{1+\sqrt{5}+2}{1+\sqrt{5}}$$

$$= \frac{3+\sqrt{5}}{1+\sqrt{5}} \cdot \underbrace{\frac{1-\sqrt{5}}{1-\sqrt{5}}}_{=1}$$

$$= \frac{3-3\sqrt{5}+\sqrt{5}-5}{1^2-(\sqrt{5})^2}$$

$$= \frac{-2-2\sqrt{5}}{1-5} = \frac{-2-2\sqrt{5}}{-4}$$

$$= \frac{1+\sqrt{5}}{2}$$

On vient de vérifier que

$$1+\frac{1}{\varphi}=\varphi$$

à l'aide de la valeur exacte de φ, directement et sans l'aide de l'algèbre.