

## EXERCICE #1

simplifier

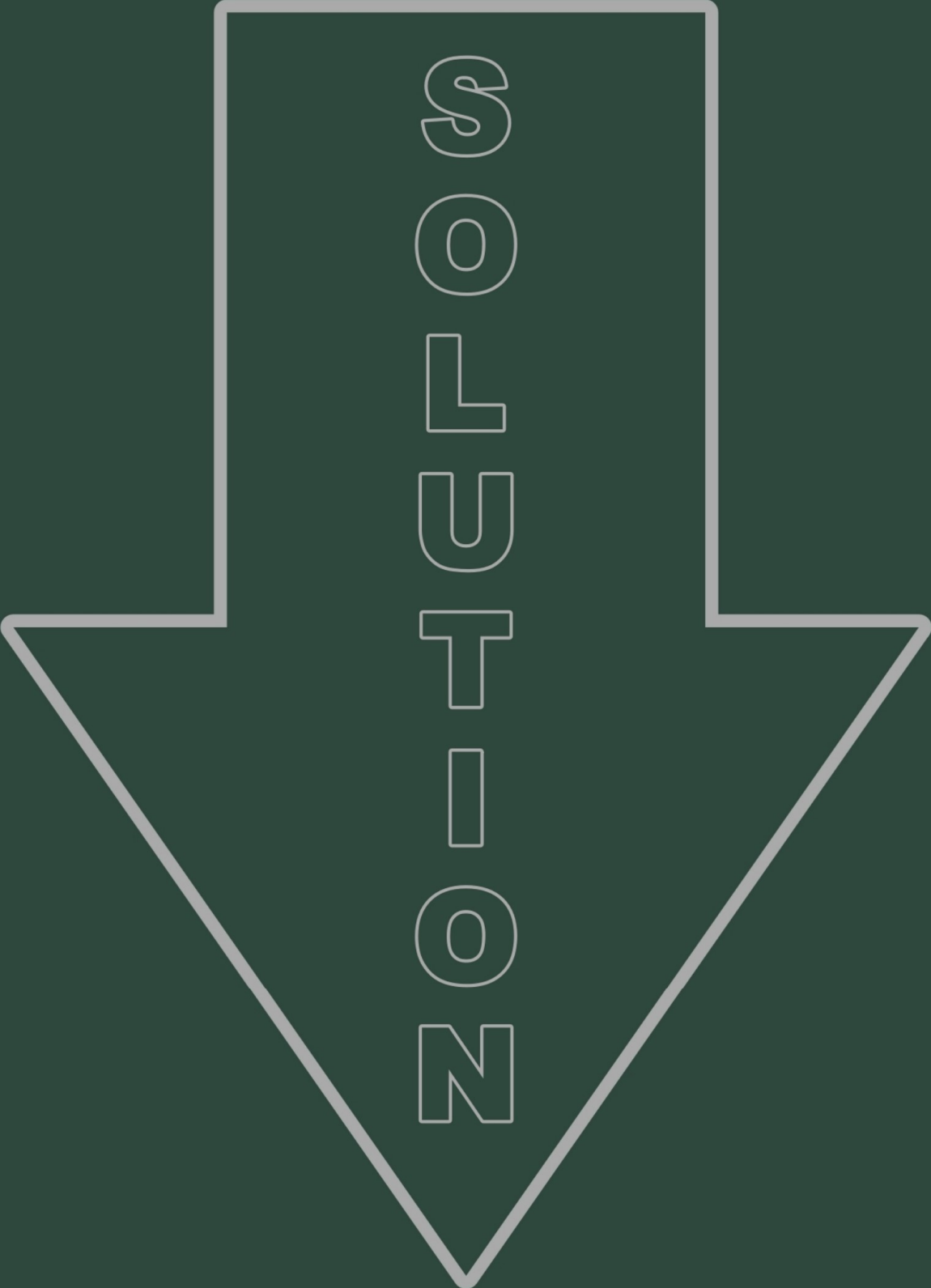
$$\frac{(\sqrt{48})^5}{24^2} = ?$$

## EXERCICE #2

évaluer

à une valeur proche

$$\left(\frac{9}{4}\right)^{\frac{9}{4}} = ?$$



----- Q U E S T I O N -----

$$(\sqrt{48})^5/24^2 = ? \text{ (simplifier)}$$

----- R É P O N S E -----

$$(\sqrt{48})^5/24^2$$

$$= (48^{(1/2)})^5/24^2$$

$$= 48^{(5/2)}/24^2$$

$$\text{note: } 5/2 = (4 + 1)/2 = 4/2 + 1/2 = 2 + 1/2$$

$$= 48^{(2 + 1/2)}/24^2$$

$$= (48^2 \cdot 48^{(1/2)})/24^2$$

$$= 2^2 \cdot 48^{(1/2)}$$

$$= 4 \cdot (3 \cdot 16)^{(1/2)}$$

$$= 4 \cdot 3^{(1/2)} \cdot 16^{(1/2)}$$

$$= 4 \cdot \sqrt{3} \cdot \sqrt{16}$$

$$\begin{array}{c} \text{-----} \\ | \quad (\sqrt{48})^5/24^2 = 16\sqrt{3} \quad | \\ \text{-----} \end{array}$$

----- Q U E S T I O N -----

$(9/4)^{(9/4)} = ?$  (évaluer)

----- R É P O N S E -----

$(9/4)^{(9/4)}$

note:  $9/4 = 1/2 + 1/2 + 1/2 + 1/2 + 1/4$

$= (9/4)^{(1/2 + 1/2 + 1/2 + 1/2 + 1/4)}$

$= (9/4)^{(1/2)} \cdot (9/4)^{(1/2)} \cdot (9/4)^{(1/2)} \cdot (9/4)^{(1/2)} \cdot (9/4)^{(1/4)}$

$= \sqrt{9/4} \cdot \sqrt{9/4} \cdot \sqrt{9/4} \cdot \sqrt{9/4} \cdot (9/4)^{(1/4)}$

$= (3/2) \cdot (3/2) \cdot (3/2) \cdot (3/2) \cdot (9/4)^{(1/4)}$

$= (81/16) \cdot (9/4)^{(1/4)}$

$= (81/16) \cdot ((3/2)^2)^{(1/4)}$

$= (81/16) \cdot (3/2)^{(1/2)}$

$= (81/16) \cdot \sqrt{3/2}$

$= (81/16) \cdot (\sqrt{3}/\sqrt{2})$

$= (81 \cdot \sqrt{3}) / (16 \cdot \sqrt{2})$

notes:

- $81/16 \approx 5$
- $\sqrt{3}/\sqrt{2} = (\sqrt{3} \cdot \sqrt{2}) / (\sqrt{2}) \cdot \sqrt{2} = (\sqrt{3} \cdot \sqrt{2}) / 2 = \sqrt{6}/2 \approx 2,4/2 = 1,2$
- $\Rightarrow (81/16) / (\sqrt{3}/\sqrt{2}) \approx 5 \cdot 1,2 \approx 6$

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|  $(9/4)^{(9/4)} \approx 6$  |  
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vérification avec la calculatrice:  $(9/4)^{(9/4)} = 6,200270$