
$27^{\frac{1}{x}} = \frac{1}{9}$

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

27^(1/x) = 1/9

x = ?

---------- R É P O N S E ----------

27^(1/x) = 1/9

(27^(1/x))^x = (1/9)^x

27^(x/x) = 1/9^x

27 = 1/9^x

rappel: si a/b = c/d alors ad = bc

27/1 = 1/9^x => 9^x·27 = 1

----- conclusion #1 (avec une calculatrice) -----

9^x = 1/27

x = log(1/27)/log(9)

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|   x = -1.5   |
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(fin)

----- conclusion #2 (SANS calculatrice) -----

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----- conclusion #2 (SANS calculatrice) -----
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9^x = 1/27

x = log[3](1/27)/log[3](9)

x = (log[3](1) - log[3](27))/log[3](9)

x = (log[3](1) - log[3](3³))/log[3](3²)

rappels:

• log[b](1) = 0

• log[b](b) = 1

• log[b](m·n) = log[b](m) + log[b](n)

• log[b](m/n) = log[b](m) - log[b](n)

x = (0 - 3·log[3](3))/(2·log[3](3))

x = (0 - 3·1)/(2·1)

x = -3/2

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|   x = -1.5   |
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 (fin)
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---------- R É P O N S E (LM) ----------

27^(1/x) = 1/9

9·27^(1/x) = 1

3^2·(3^3)^(1/x) = 1

3^2·3^(3·1/x) = 1

3^(2 + 3/x) = 1

3^(2 + 3/x) = 3^0

même base (= 3), donc:

2 + 3/x = 0

3/x = -2

2x = -3

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|   x = -1.5   |
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```

(fin)