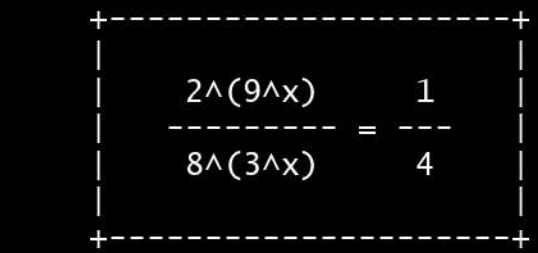
<> Question: résoudre



<> Réponse:

convention d'écriture: log[b](a) <-- [b] = base du logarithme

2^(9^x)/8^(3^x) = 1/4

2^(9^x)/2^3^(3^x) = 1/4

2^(9^x)/2^(3*3^x) = 1/4

2^(9^x - 3*3^x) = 1/4

log[2](2^(9^x - 3*3^x)) = log[2](1/4)

log[2](2^(9^x - 3*3^x)) = log[2](1) - log[2](4)

(9^x - 3*3^x) log[2](2) = log[2](1) - log[2](4)

note: log[2](1) = 0

(9^x - 3*3^x) log[2](2) = 0 - log[2](4)

9^x - 3*3^x = (0 - log[2](4))/log[2](2)

9^x - 3*3^x = 0/log[2](2) - log[2](4)/log[2](2)

9^x - 3*3^x = 0 - 2/1

9^x - 3*3^x = 0 - 2

9^x - 3*3^x = -2

(3^2)^x - 3*3^x = -2

(3^x)^2 - 3*3^x = -2

(3^x)^2 - 3*3^x + 2 = 0

changement de variable: 3^x = X   <-------- ETIQUETTE (1)

X² - 3X + 2 = 0

delta = (-3)^2 - 4*1*2 = 9 - 8 = 1

√(delta) = √1 = 1

X' = (-(-3) + 1)/2*1 = 4/2 = 2

X" = (-(-3) - 1)/2*1 = 2/2 = 1

rappel: X = 3^x

racine #1:

X' = 3^x = 2

log[3](3^x) = log[3](2)

x log[3](3) = log[3](2)

note: log[3](3) = 1

x*1 = log[3](2)

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+---------------+
| x = log[3](2) |
+---------------+
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racine #2:

X" = 3^x = 1

log[3](3^x) = log[3](1)

x log[3](1) = log[3](1)

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

note: log[3](1) = 0

x = 0/0 <-- division par zéro !!!

```
+------------------------+
| pas de deuxième racine |
+------------------------+
```

<> Vérification:

x = log[3](2) = 0,63092975357 = 0,631

2^(9^x)/8^(3^x)

= 2^(9^0,631)/8^(3^0,631)

= 16,00/64,02

= 1/4 <--- Ok !

<> Réponse (alternative proposée par LM):

```
\\                                          \\
// ici, la première partie évite astucieusement //
\\                                          \\
// le recours aux logarithmes               //
\\                                          \\
```

```
   2^(9^x)/8^(3^x) = 1/4

   2^(9^x)/8^(3^x) = 1/2^2

   2^2*2^(9^x) = 1*8^(3^x)

   2^(2 + 9^x) = 2^3^(3^x)

   2^(2 + 9^x) = 2^(3*3^x)

   2 + 9^x = 3*3^x

   2 + (3^2)^x - 3*3^x = 0

   2 + (3^x)^2 - 3*3^x = 0

   (3^x)^2 - 3*3^x + 2 = 0

   PUIS RETOUR CI-DESSUS --------> ETIQUETTE (1)

<> FIN
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