$$6^x + 9^x = 2^{(2x+1)}$$

Q U E S T I O N

6^x + 9^x = 2^(2x + 1)

x = ?

---------- R É P O N S E ----------

6^x + 9^x = 2^(2x + 1)

6^x + 9^x = 2^(2x)·2^1

6^x + 9^x = 2·4^x

(6^x + 9^x)/4^x = 2

(6/4)^x + (9/4)^x = 2

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

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

let k = (3/2)^x

k + k^2 = 2

k^2 + k - 2 = 0

Δ = 1² - 4·1·(-2) = 1 + 8 = 9

√Δ = √9 = +3 et √9 = -3

• cas √Δ = +3: k = (-1 + 3)/2·1 = 2/2 = 1

• cas √Δ = +3: k = (-1 - 3)/2·1 = -4/2 = -2

----- k = 1 -----

k = (3/2)^x

1 = (3/2)^x

x = 0

----- k = -2 -----

k = (3/2)^x

-2 = (3/2)^x

pas de solution

----- résultat final -----

```
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|   x = 0   |
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