





for the recurrence relation  $a_{2n} - 8a_{2n-2} + 16a_{2n-4} = 4^n$  ( $n \geq 1$ )

$a_1 = a_2 = 8$  Using Generating function

Ans:

$$G(x) = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots$$

$$(a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots)^2 = 4^x = a_0^2 + 2a_0 a_1 x + 2a_0 a_2 x^2 + \dots$$

$$a_0^2 + 2a_0 a_1 x + 2a_0 a_2 x^2 + \dots = 8^x$$

$$\text{Adding } a_2 x^2 \text{ on both sides,}$$

$$2a_0 a_2 x^2 + 2a_0 a_1 x^2 + 16a_0 a_2 x^4 = 8^x$$

$$\frac{2}{x^2} (a_0 a_2 x^2 + 8^x) + 16 \frac{2}{x^4} a_0 a_2 x^4 = \frac{8^x}{x^2}$$

$$a_0 a_2 x^2 + 8^x + 16a_0 a_2 x^4 = \frac{8^x}{x^2}$$

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8.Which two countries signed a historic peace treaty in 2024 after decades of conflict?



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FACTS

- 0 45 Miles apart
- Most 25.000 Are 3.000
- All Are 100% Safe
- Can't See You

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## Problem Statement

- Problem 1
- Problem 2
- Problem 3