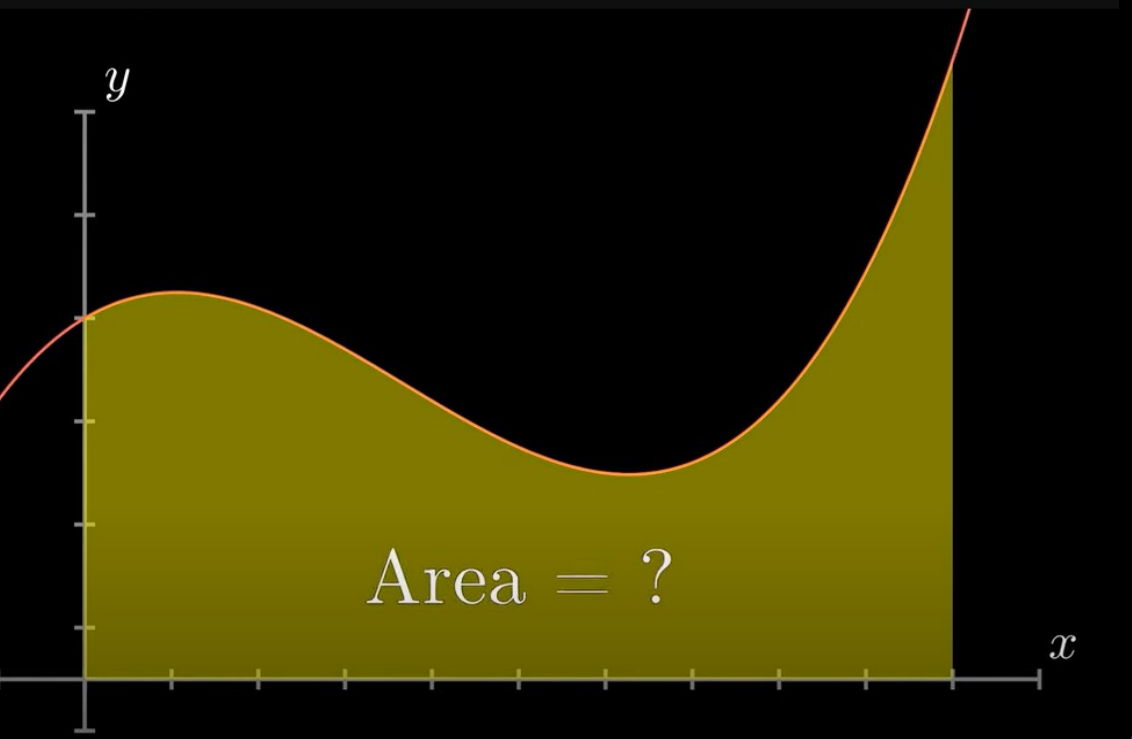
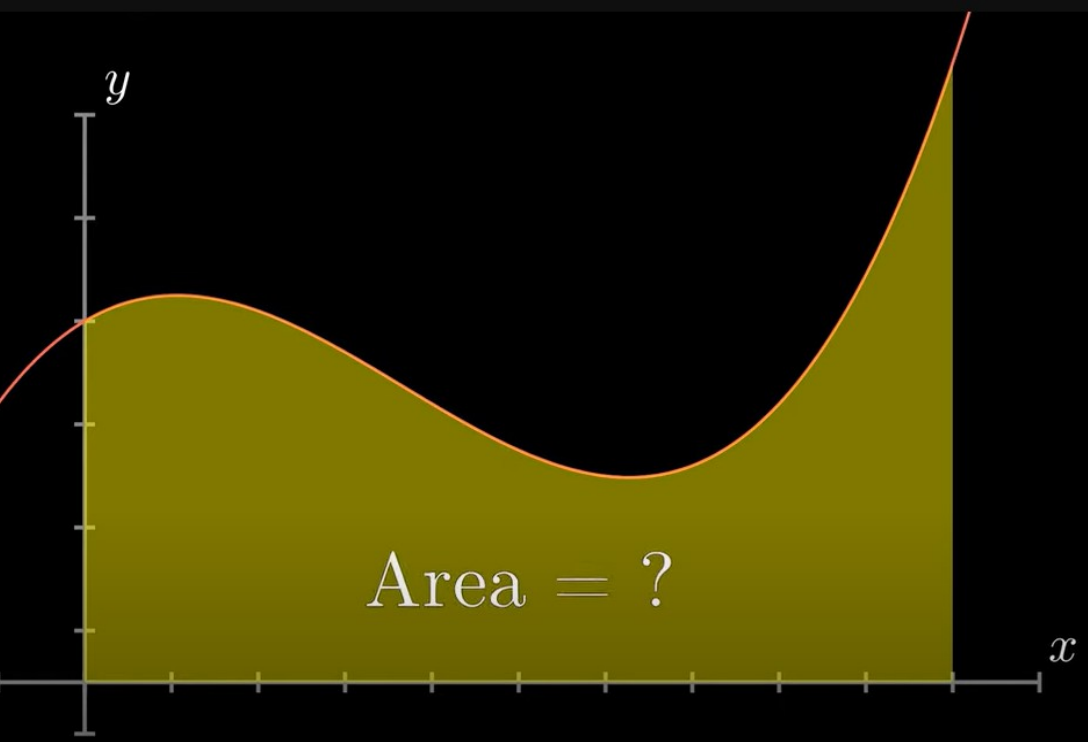
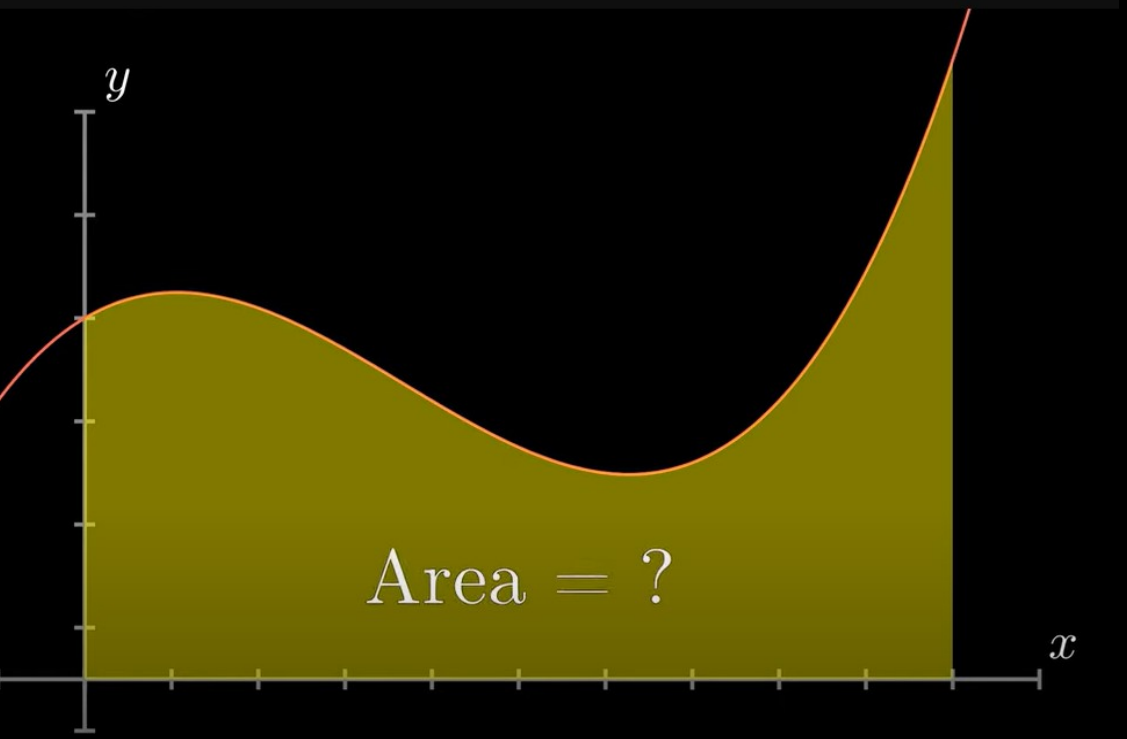


DIVIDE AND CONQUER : Parallelizing Simpson’s formula for faster integration

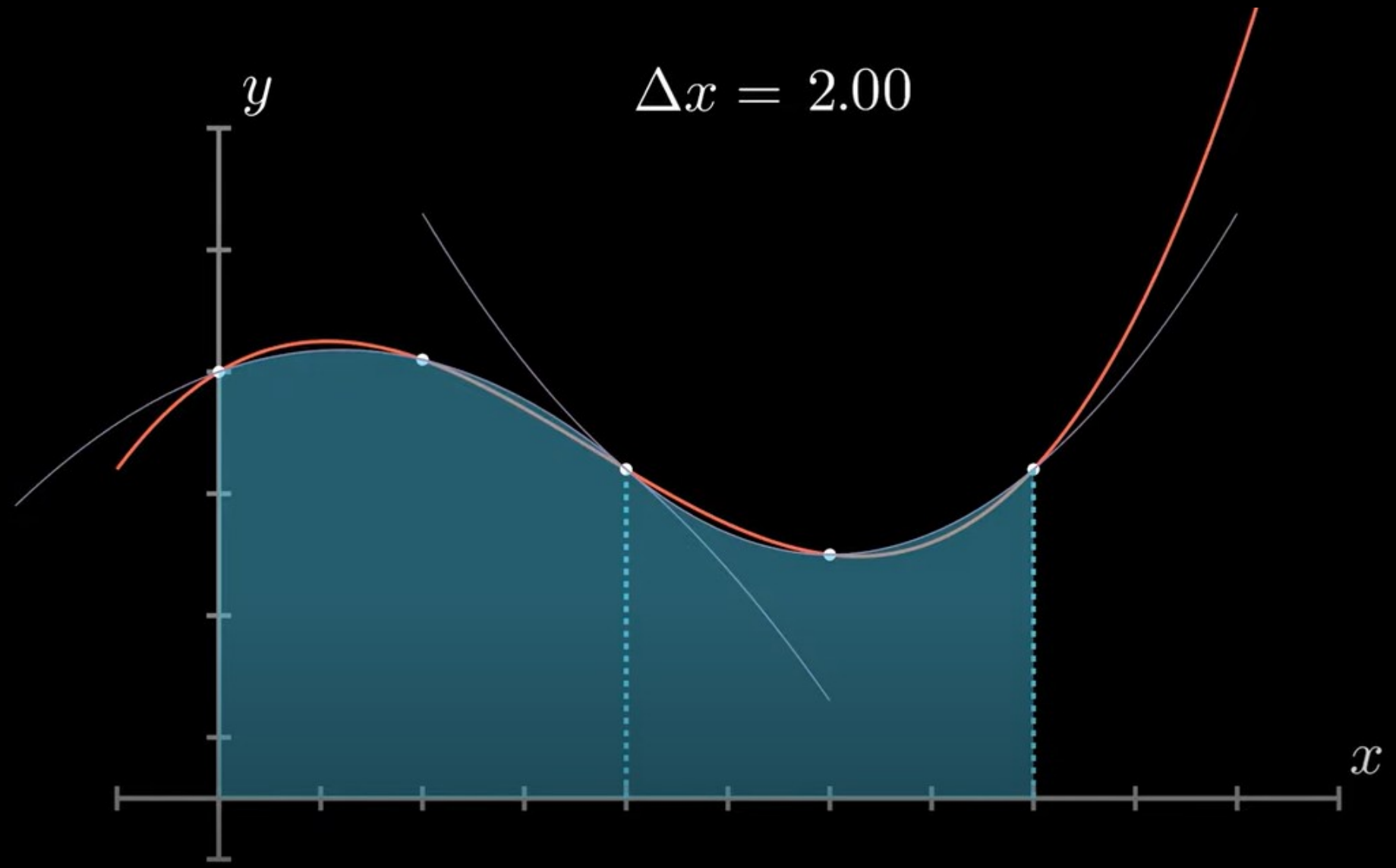


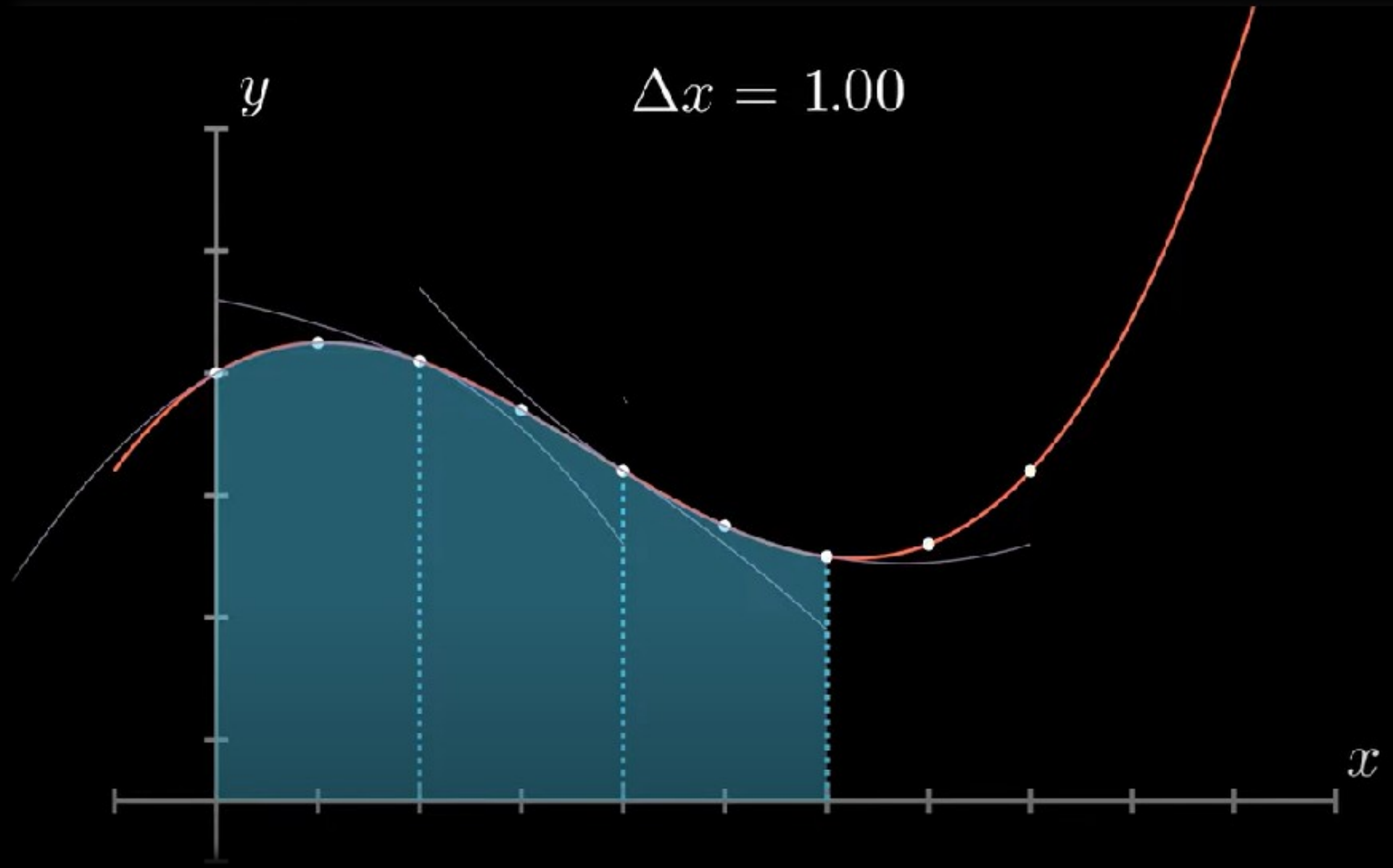
SIMPSON’S RULE :

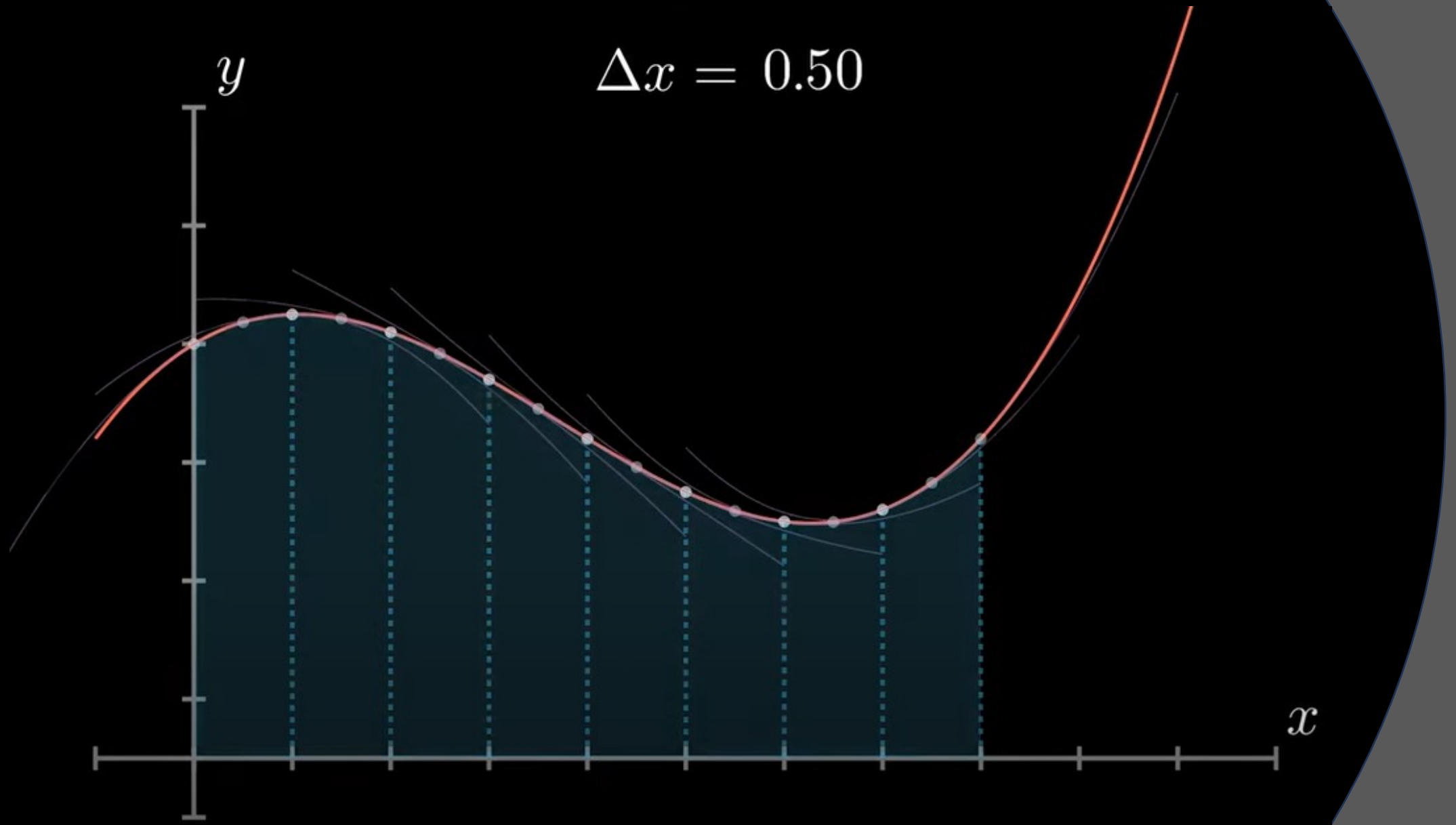
Simpson's rule approximates the definite integral of a function by fitting quadratic segments between equally spaced points and summing their areas.

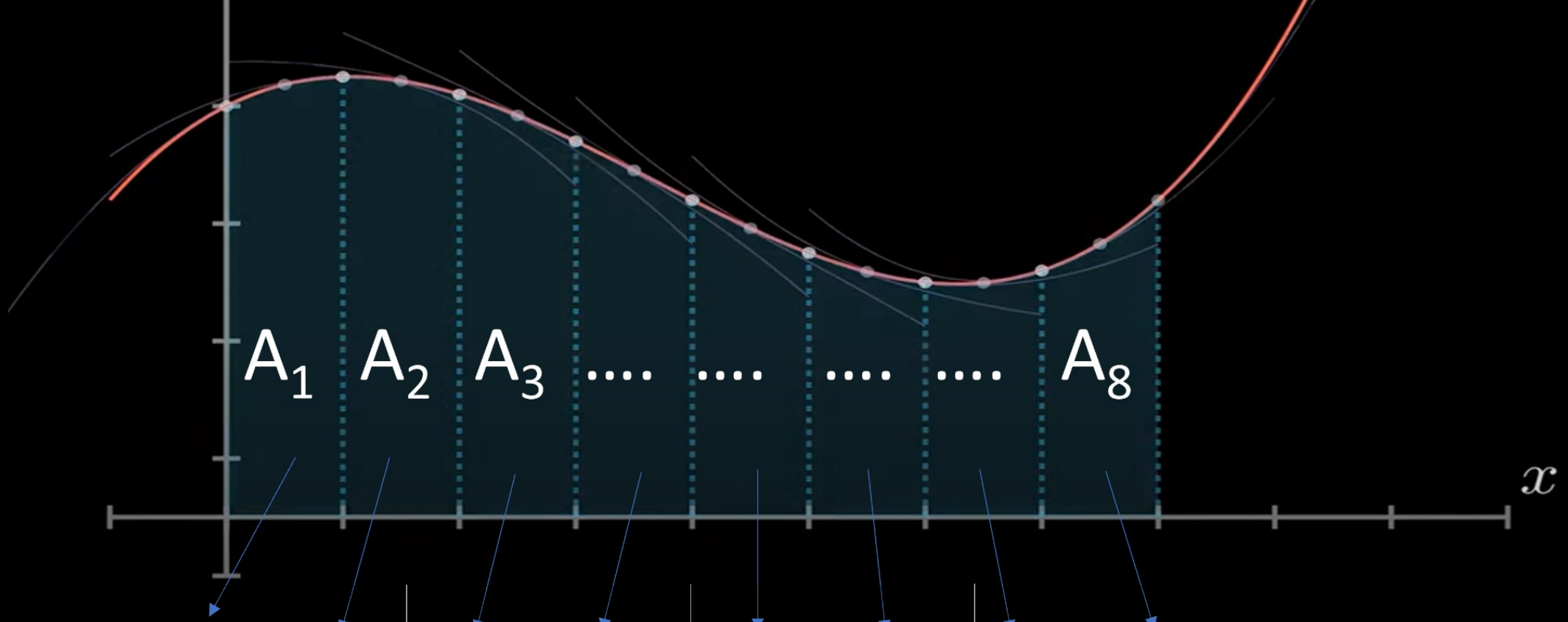


The goal is to find area under the curve within a definite range.


y
$\Delta x = 2.00$
x

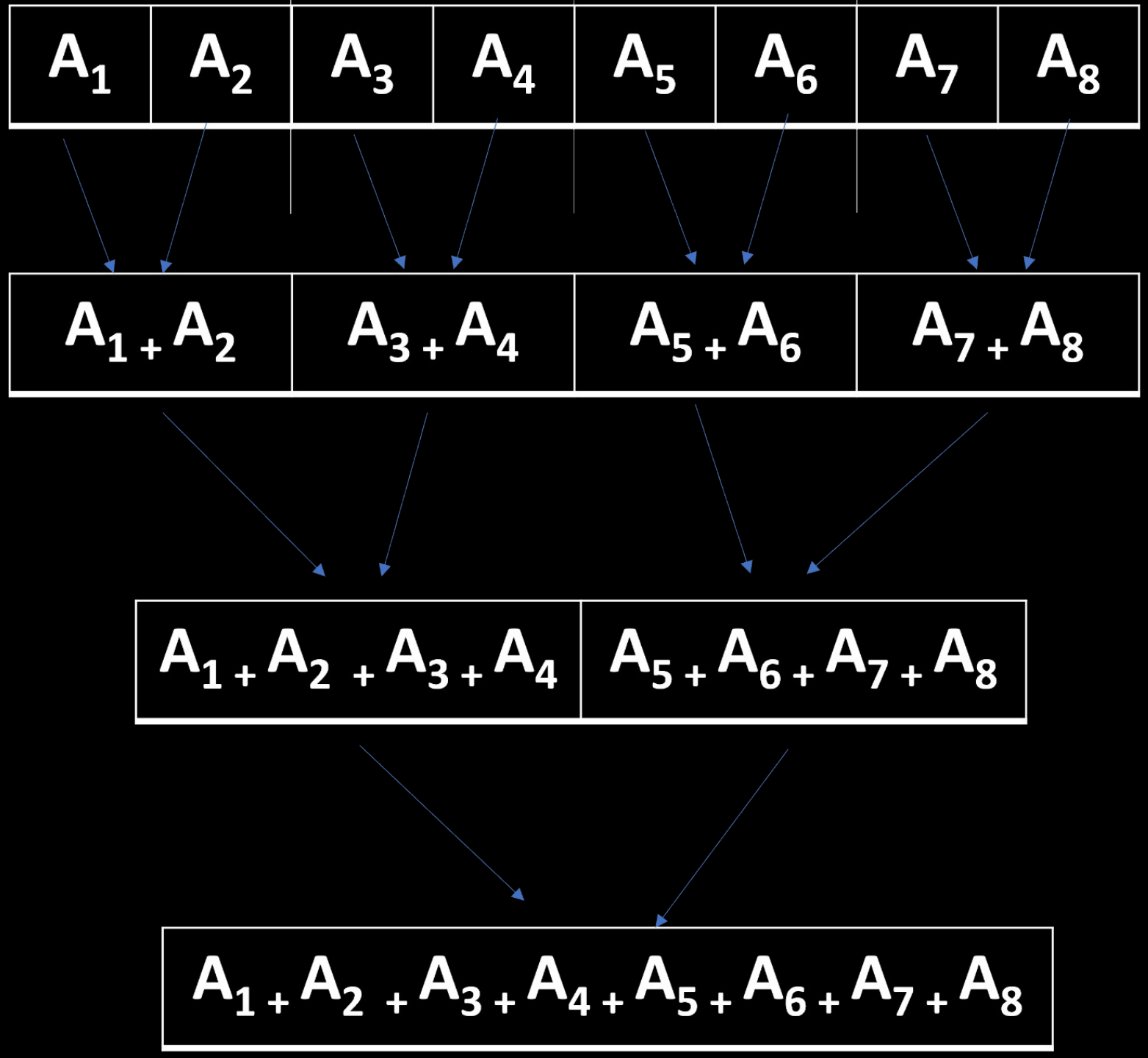

y
$\Delta x = 1.00$
x

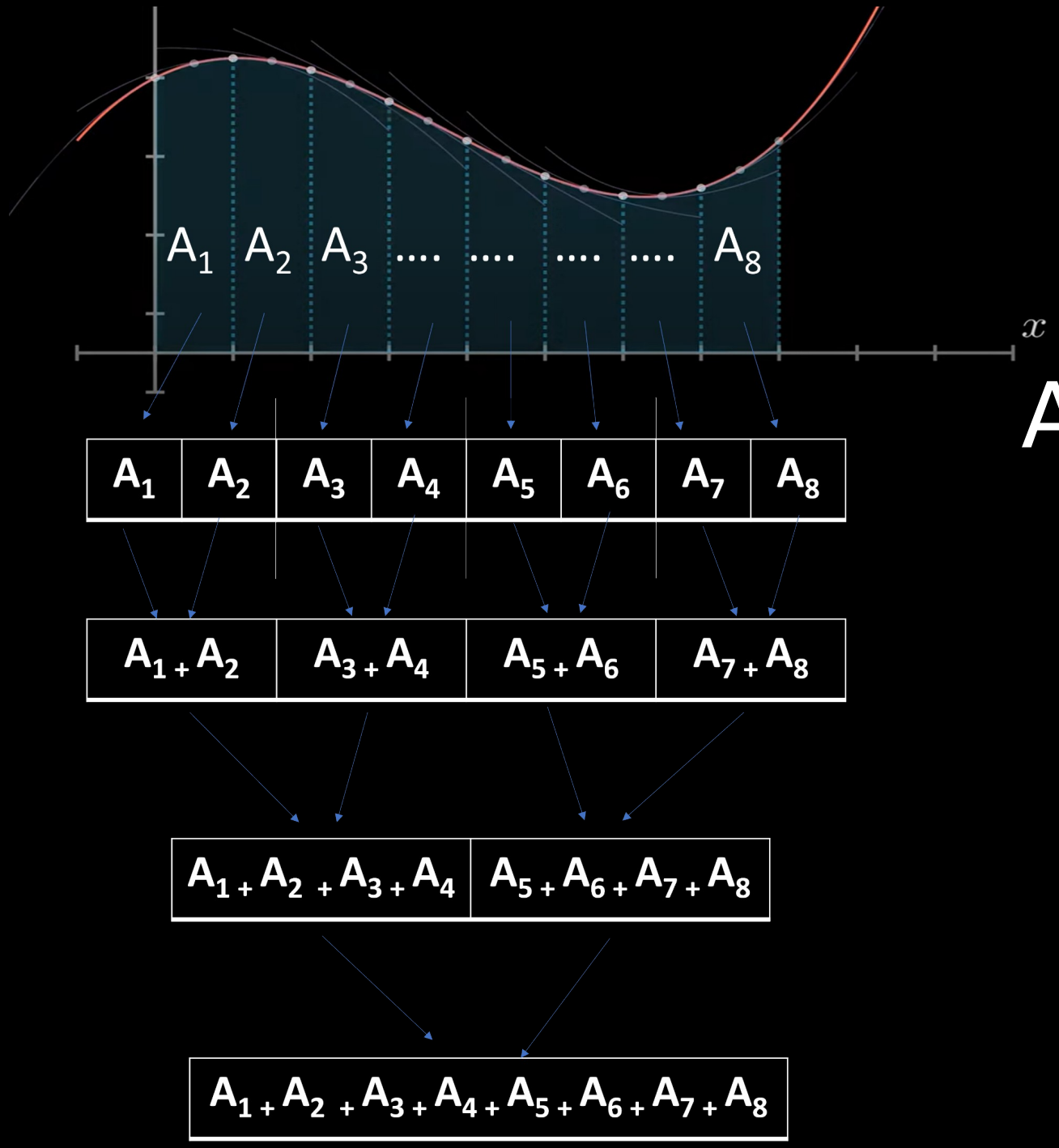

y
$\Delta x = 0.50$
x



A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8

$A_1 + A_2$	$A_3 + A_4$	$A_5 + A_6$	$A_7 + A_8$


A_1 A_2 A_3 A_4 A_5 A_6 A_7 A_8
$A_1 + A_2$ $A_3 + A_4$ $A_5 + A_6$ $A_7 + A_8$
$A_1 + A_2 + A_3 + A_4$ $A_5 + A_6 + A_7 + A_8$
$A_1 + A_2 + A_3 + A_4 + A_5 + A_6 + A_7 + A_8$



Architecture : Single Instruction Multiple Data

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Asynchronous Parallel Adaptive Simpson Integration and Its Application to Quantum Computing: https://arxiv.org/pdf/2304.01121 by S. A. Elhers and V. V. Ivanov (2022)

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