

1C  $I = \int_0^5 \frac{dx}{2-\sqrt{x}}$  observe singularity @  $x=4$

lets try intervals  $0 \leq x \leq 3.999$  &  $4.001 \leq x \leq 5$

$$\int_a^b f(x) dx \approx \frac{h}{3} \left[ f(a) + 4 \sum_{i=1}^{n/2} f(x_{2i-1}) + 2 \sum_{i=1}^{n/2-1} f(x_{2i}) + f(b) \right]$$

let  $h = \frac{b-a}{n}$  where  $n$  is even

$$h_1 = \frac{3.999 - 0}{4} = 0.99975$$

$$h_2 = \frac{5 - 4.001}{4} = 0.24975$$

$$\textcircled{1} \int_0^{3.999} f(x) dx \approx \frac{h_1}{3} \left[ f(0) + 4(f(h_1) + f(3h_1)) + 2f(2h_1) + f(3.999) \right]$$

$$\int_0^{3.999} f(x) dx \approx \frac{0.99975}{3} \left[ 0.5 + 4(0.999875 + 3.729) + 2(1.706) + 3999.75 \right]$$

$$\approx 340.547$$

$$\textcircled{2} \int_{4.001}^5 f(x) dx \approx \frac{h_2}{3} \left[ f(4.001) + 4(f(4.001 + h_2) + f(4.001 + 3h_2)) + 2f(4.001 + 2h_2) + f(5) \right]$$

$$\int_{4.001}^5 f(x) dx \approx \frac{0.24975}{3} \left[ -4000.25 + 4(-16.198) + (-5.571) + (-16.469) + (-4.234) \right] \approx 340.602$$

Answer =  $\textcircled{1} + \textcircled{2}$