

Multiple-Choice Test – Simpson’s 1/3 Rule
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1. The highest order of polynomial integrand for which Simpson’s 1/3 rule of integration is exact is
- (A) first
 - (B) second
 - (C) third
 - (D) fourth

2. The value of $\int_{0.2}^{2.2} e^x dx$ by using 2-segment Simpson’s 1/3 rule most nearly is
- (A) 7.8036
 - (B) 7.8423
 - (C) 8.4433
 - (D) 10.246

3. The value of $\int_{0.2}^{2.2} e^x dx$ by using 4-segment Simpson’s 1/3 rule most nearly is
- (A) 7.8036
 - (B) 7.8062
 - (C) 7.8423
 - (D) 7.9655

4. The velocity of a body is given by
- $$v(t) = 2t, \quad 1 \leq t \leq 5$$
- $$= 5t^2 + 3, \quad 5 < t \leq 14$$

where t is given in seconds, and v is given in m/s. Using two-segment Simpson’s 1/3 rule, the distance in meters covered by the body from $t = 2$ to $t = 9$ seconds most nearly is

- (A) 949.33
- (B) 1039.7
- (C) 1200.5
- (D) 1442.0



5. The value of $\int_3^{19} f(x)dx$ by using 2-segment Simpson's 1/3 rule is estimated as 702.039. The estimate of the same integral using 4-segment Simpson's 1/3 rule most nearly is

- (A) $702.039 + \frac{8}{3}[2f(7) - f(11) + 2f(15)]$
 (B) $\frac{702.039}{2} + \frac{8}{3}[2f(7) - f(11) + 2f(15)]$
 (C) $702.039 + \frac{8}{3}[2f(7) + 2f(15)]$
 (D) $\frac{702.039}{2} + \frac{8}{3}[2f(7) + 2f(15)]$

6. The following data of the velocity of a body is given as a function of time.

Time (s)	4	7	10	15
Velocity (m/s)	22	24	37	46

The best estimate of the distance in meters covered by the body from $t = 4$ to $t = 15$ using combined Simpson's 1/3 rule and the trapezoidal rule would be

- (A) 354.70
 (B) 362.50
 (C) 368.00
 (D) 378.80

