

1 Numerical Integration

1. True False Using the left endpoint/right endpoint/midpoint rule/trapezoid rule/Simpson's rule to approximate an integral will only give you an approximate answer and never the real answer.
2. Approximate $\int_1^2 x^2 dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
3. Approximate $\int_0^1 \cos(2x) dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
4. Approximate $\int_0^2 e^{2x} dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
5. Approximate $\int_{-1}^1 x^3 dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
6. Approximate $\int_1^3 \ln x dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
7. Approximate $\int_1^2 xe^x dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.
8. Approximate $\int_1^4 \sqrt{x} dx$ using the midpoint rule, trapezoid rule, and Simpson's rule with $n = 4$.