1. The degree of precision of the follwing quadrature rule is 1:

$$\int_{-1}^{1} f(x)\,\mathrm{d}x \approx 2f(0) - f(-1) + f(1).$$

2. The closed Newton–Cotes rule with n points is exact for all polynomials of degree up to $n+1$.

3. Simpson's composite integration rule is always correct if f is a polynomial.

4. The degree of precision of the following quadrature rule is 0:

$$\int_{-1}^{1} f(x)\,\mathrm{d}x \approx 2f(1).$$

5. Suppose that $f \in C^\infty[a,b]$ and let $I_n[f]$ denote the approximate integral of f using the composite trapezium rule with n integration points. Then it holds that

$$\lim_{n\to\infty} n\Big|I[f] - I_n[f]\Big| = 0, \qquad I[f] := \int_a^b f(x)\,\mathrm{d}x.$$

6. Suppose that $f \in C^\infty[a,b]$ and let $I_n[f]$ denote the approximate integral of f using the composite trapezium rule with n integration points. Then there exists C such that

$$\forall n \in \{2,3,\dots\}, \qquad \Big|I[f] - I_n[f]\Big| \leq \frac{C}{n^2}.$$

7. Suppose that $f \in C^\infty[a,b]$ and let $I_n[f]$ denote the approximate integral of f using the composite trapezium rule with n integration points. Then it holds that

$$\lim_{n\to\infty} n\Big|I[f] - I_n[f]\Big| = 0.$$

8. There exist w_1 and w_2 such that the degree of precision of the following rule is 4:

$$\int_{-1}^{1} f(x)\,\mathrm{d}x = w_1 f(0) + w_2 f(1) + w_3 f(-1) + w_4 f\left(\frac{1}{3}\right).$$

9. In Julia, the following code implements the composite trapezium rule with $n+1$ points:

```julia
f(x) = sin(x)
function I_approx(a, b, n)
    x = LinRange(a, b, n)
    h = x[2] - x[1]
    return h/2 * sum(f, x[1:n]) + h/2 * sum(f, x[2:end])
end
```

10. In Julia, the following code implements the composite Simpson rule with $n+1$ points:

```julia
f(x) = sin(x)
function I_approx(a, b, n)
    x = LinRange(a, b, n)
    h = x[2] - x[1]
    w = [1; [2 + 2(i%2) for i in 0:n-1]; 1]
    return h/3 * w'f.(x)
end
```