

EXAM 1 CRIB

For all topics and methods, you must: be able to use them correctly, know their properties and characteristics, know their pros and cons, etc. That is, you must also know concepts! You should know all the names of the methods. You are also responsible for knowing anything we covered that does not appear on this crib. The absence of a topic on this crib does not mean that you are not responsible for knowing it.

“Interpretation (understanding concepts) is at least as important as correct results.”

—Prof. Kevin G. TeBeest

Truncation Error: You should know all facets of truncation error. (See examples and homework.)

Horner’s Method: You should be able to write a polynomial in nested form as shown in class.

Bisection Method:

$$x_m = \frac{x_\ell + x_r}{2}$$
$$|Error_n| \leq \frac{b - a}{2^n}$$

Method of False Position:

$$x_m = \frac{x_\ell \cdot y_r - x_r \cdot y_\ell}{y_r - y_\ell}$$

Newton’s Method:

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

Fixed Point Method:

You must know how to use the fixed point method and be able to state and use its convergence theorem.

Aitken Acceleration:

You must know how to use Aitken acceleration with the fixed point method.

$$d_1 = x_0 - x_1,$$
$$d_2 = x_0 - 2x_1 + x_2,$$
$$X = x_0 - \frac{d_1^2}{d_2}$$