MA1E01: Tutorial week 9

REMEMBER TO HAND BEFORE THE TUTORIAL STARTS

- Asymptotes.
- Maximum minimum.
- Newton method

Problem 1 *Determine the horizontal and vertical asymptotes of the function*

$$f(x) = \frac{6x^3 + 3x + 1}{x^2 - 3x + 2}$$

Problem 2 *Using only the 4 basic operations: sum, substraction, multiplication and division of real numbers, find an approximation of $\sqrt{2}$ good to 6 decimal places. (**NOTE:** you have to use that $\sqrt{2}$ is the solution of $x^2 - 2 = 0$.)*

Problem 3 *Using only the 4 basic operations: sum, substraction, multiplication and division of real numbers, find an approximation of $\sqrt[3]{7}$ good to 6 decimal places.*

Problem 4 *Find the maxima and minima of the following function by using the first derivative criteria. Check that the result is consistent by using the second derivative criteria.*

$$f(x) = x^6 - 2x^5 + x^4 + 12$$

Problem 5 *Find the maxima and minima of the following function by using the first derivative criteria. Check that the result is consistent by using the second derivative criteria.*

$$f(x) = x^5 - \frac{20}{3}x^3 - 3$$