UM 101: QUIZ 6

Dec. 01, 2022

Duration. 15 minutes

Maximum score. 10 points

Name.

Tutorial section.

Problem. Let f be a polynomial of degree $d \geq 1$, i.e., f is of the form

$$f(x) = a_d x^d + a_{d-1} x^{d-1} + \cdots + a_0, \quad x \in \mathbb{R},$$

for some $a_0, ..., a_d \in \mathbb{R}$. Suppose $a_0 a_d < 0$.

(*a*) Show that there is some **positive** real number c such that $f(c) = 0$.

(*b*) Give an example of a polynomial f that satisfies the above condition, but has no negative roots.