1. PROBLEMS ABOUT POLYNOMIALS
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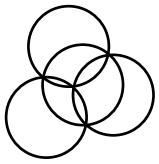

b1. Find the values of the real parameter a for which the function $f : \mathbb{R} \to \mathbb{R}$,

$$f(x) = x^2 + (a+2)x + a^2 + 1$$

takes only positive values.

b2. Find the real values of the parameter m such that all the roots of the equation

$$x(x-1)(x-2)(x-3) = m$$

are real.

b3. Find all real numbers m such that for all $x, y \in \mathbb{R}$ one has

$$x^2 + my^2 - 4my + 6y - 6x + 2m + 8 \geq 0.$$

b4. Find all real numbers a such that for all $x, y \in \mathbb{R}$ one has

$$2a(x^2 + y^2) + 4axy - y^2 - 2xy - 2x + 1 \geq 0.$$