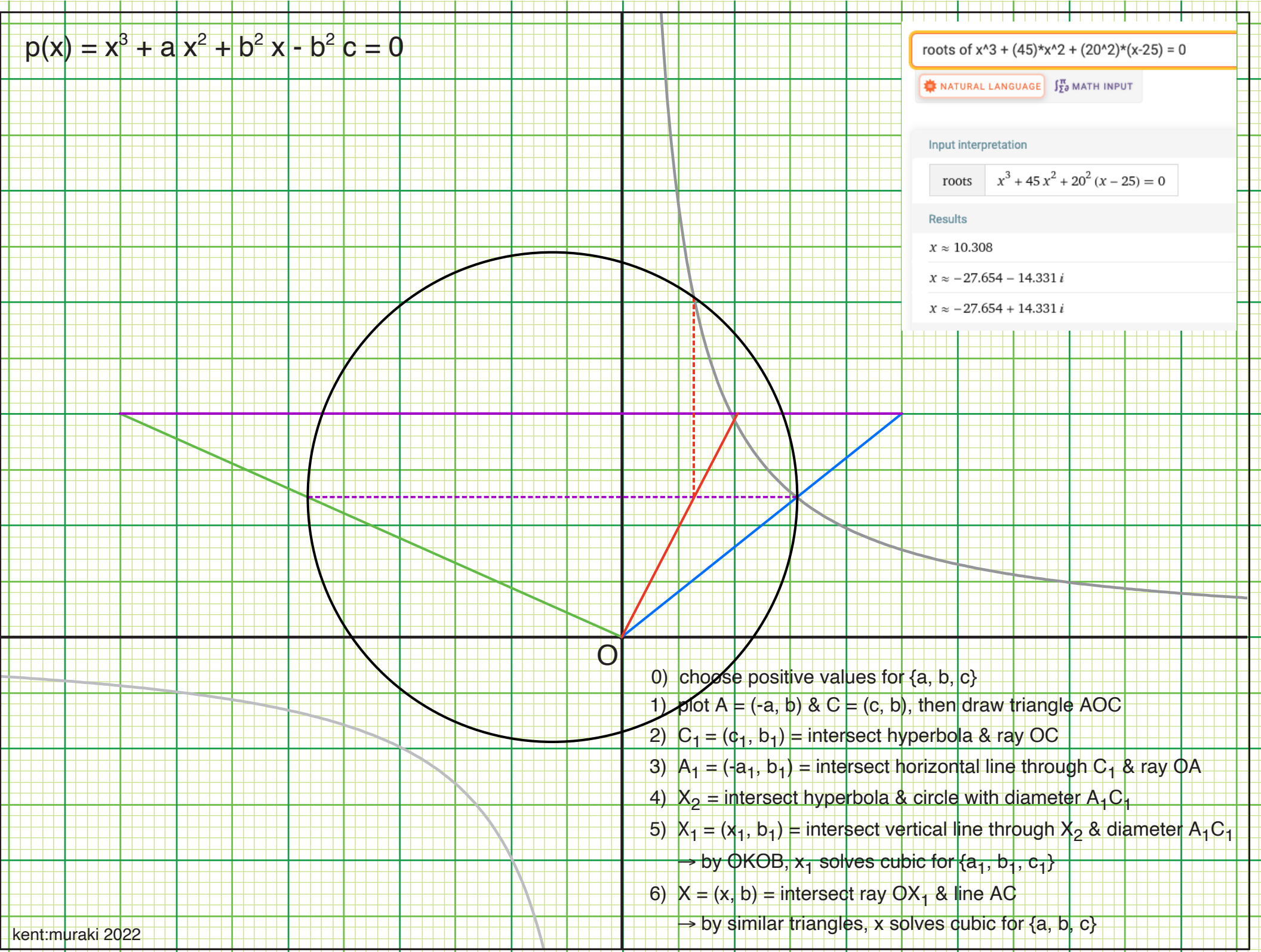
$p(x) = x^3 + a\,x^2 + b^2\,x - b^2\,c = 0$



roots of x^3 + (45)*x^2 + (20^2)*(x-25) = 0

NATURAL LANGUAGE | MATH INPUT

Input interpretation

roots | $x^3 + 45\,x^2 + 20^2\,(x - 25) = 0$

Results

$x \approx 10.308$

$x \approx -27.654 - 14.331\,i$

$x \approx -27.654 + 14.331\,i$

0) choose positive values for {a, b, c}
1) plot A = (-a, b) & C = (c, b), then draw triangle AOC
2) $C_1 = (c_1, b_1)$ = intersect hyperbola & ray OC
3) $A_1 = (-a_1, b_1)$ = intersect horizontal line through C_1 & ray OA
4) X_2 = intersect hyperbola & circle with diameter A_1C_1
5) $X_1 = (x_1, b_1)$ = intersect vertical line through X_2 & diameter A_1C_1
   → by ~~OKOB~~, x_1 solves cubic for $\{a_1, b_1, c_1\}$
6) X = (x, b) = intersect ray OX_1 & line AC
   → by similar triangles, x solves cubic for {a, b, c}