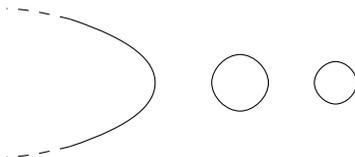


### Comprehension questions

PROBLEM 19.1. Find a polynomial  $p$  such that  $p(x) = y^2$  looks like this (qualitatively):



PROBLEM 19.2. Draw the algebraic curve  $x(x+1)(x+2)y(y+1)(y+2) = 0$ . (You may not use a computer or calculator for this.)

PROBLEM 19.3. Draw, approximately, the algebraic curve  $1 - 4(x^2 + y^2 - 2)^2 + (x^2 + y^2 - 2)^4 = 0$ . (You may not use a computer or calculator for this.)

PROBLEM 19.4. Draw the algebraic curve  $(2y^2 - x^2 + 2)^2 + (2y^2 + x^2 - 6)^2 = 0$ . (You may not use a computer or calculator for this.)

PROBLEM 19.5. The parametrization  $x(t) = \tan(t)$ ,  $y(t) = \cos(t)^2$  traces out an algebraic curve of degree 3. What's the equation of that curve? (This is part of a family of curves named after Maria Gaetana Agnesi, the first woman to be appointed to a mathematics professorship in European history, back in the 18th century.)

MIT OpenCourseWare  
<https://ocw.mit.edu>

18.900 Geometry and Topology in the Plane  
Spring 2023

For information about citing these materials or our Terms of Use, visit: <https://ocw.mit.edu/terms>.