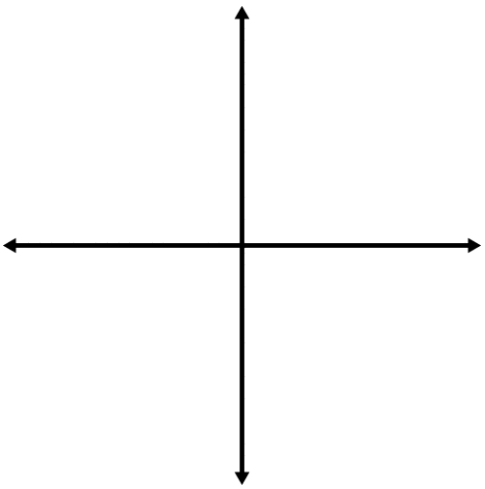
APR.B

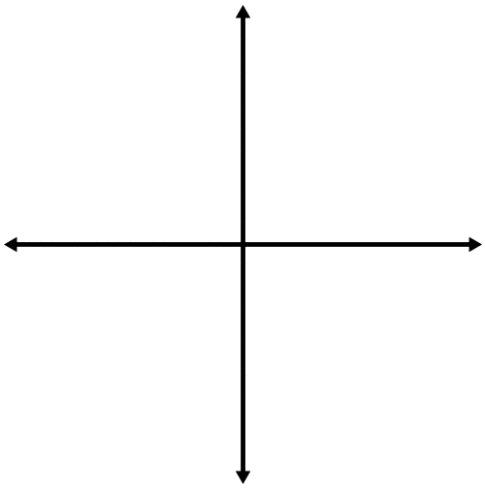
Sketching Polynomials Exploration

Sketch a polynomial given the degree and number of real roots.

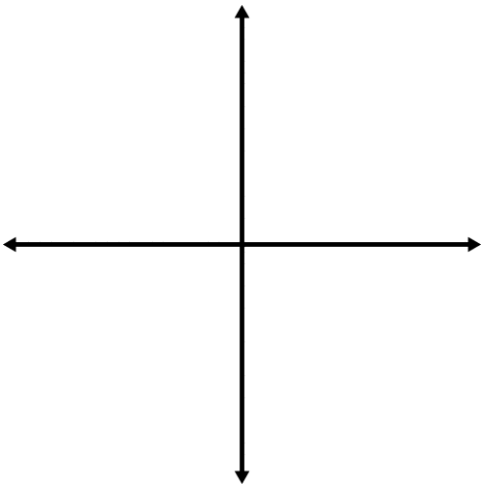
1. Degree 2, 0 Real Roots, LC+



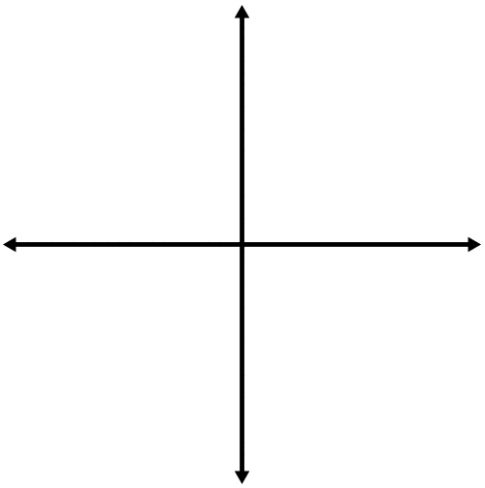
2. Degree 3, 1 Real Root, LC-



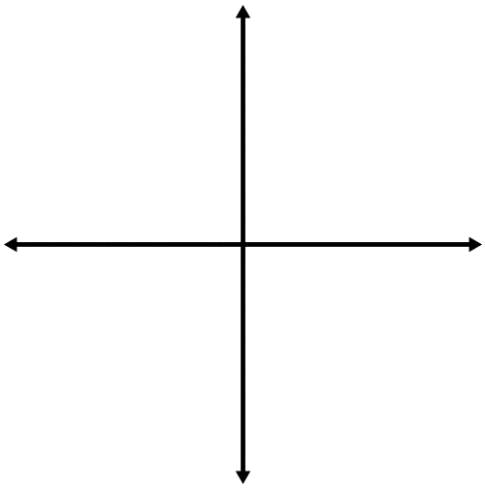
3. Degree 3, 2 Real Roots LC+



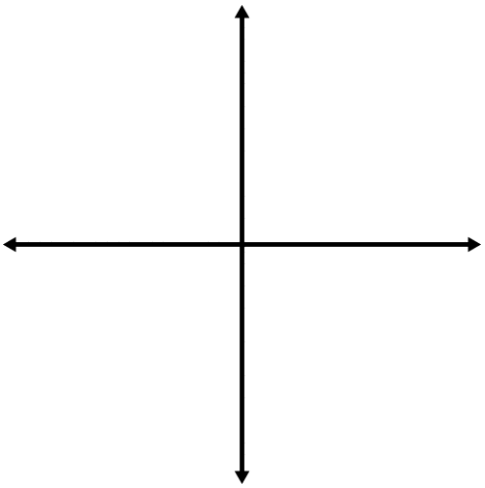
4. Degree 4, 4 Real Roots LC-



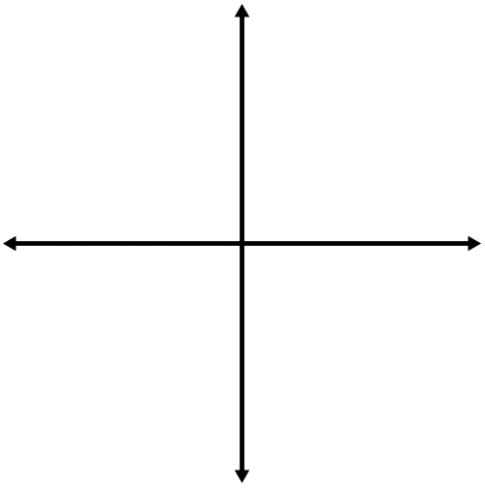
5. Degree 4, 1 Real Root LC+



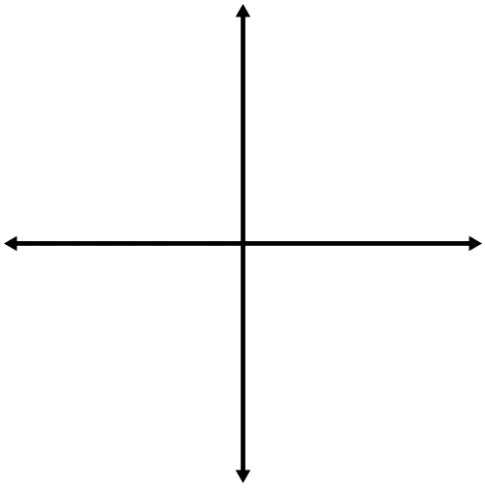
6. Degree 4, 2 Real Roots LC+



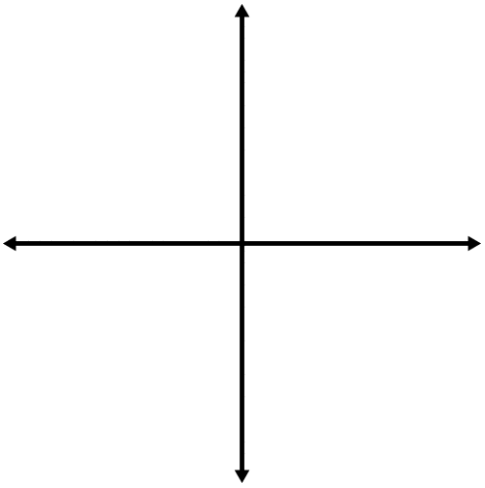
7. Degree 5, 3 Real Roots
   LC+



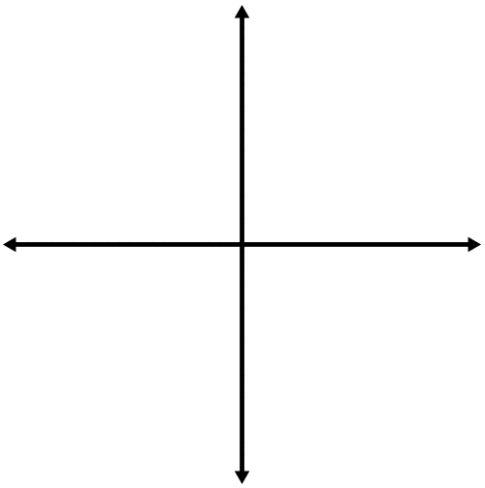
8. Degree 5, 1 Real Root
   LC-



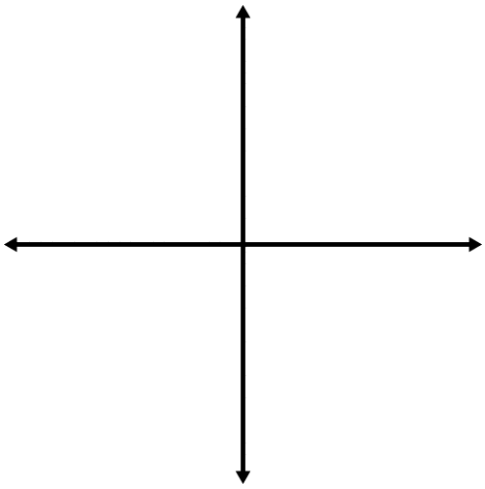
9. Degree 5, 4 Real Roots
   LC+



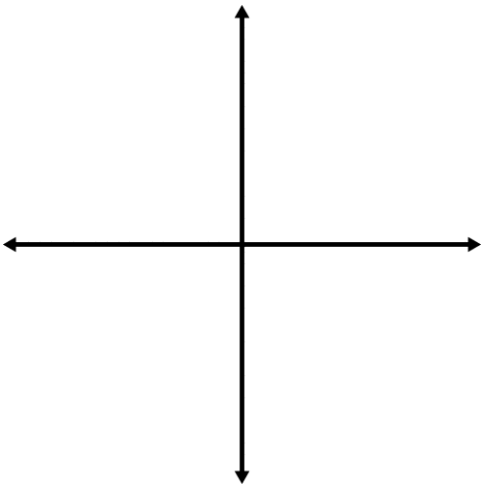
10. Degree 6, 4 Real Roots
    LC+



11. Degree 6, 1 Real Root
    LC+

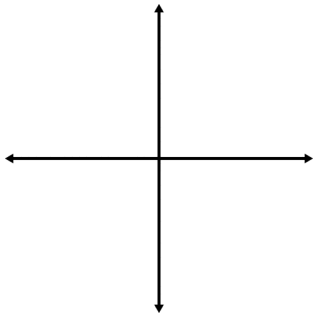


12. Degree 6, 0 Real Root
    LC-

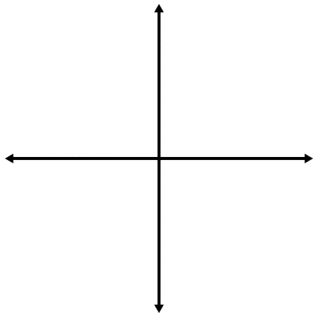


Graph the following using your graphing calculator. Sketch a picture of your graph on the axes provided.

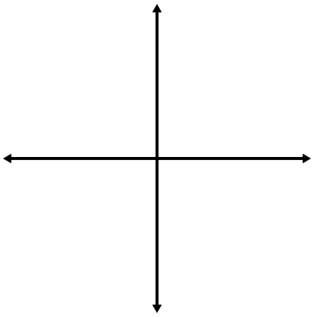
1. $y = 2x^3 + 8x^2 - 3x - 10$



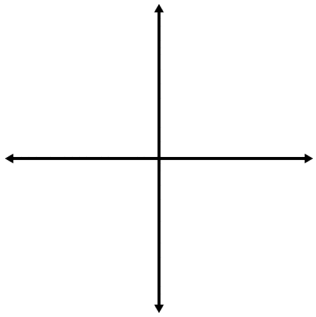
2. $y = -3x^4 - x^3 + 15x^2 - 12$



3. $y = -x^5 + 4x^4 + 4x^3 - 16x^2$



4. $y = .05x^6 - .05x^5 - 1.2x^4 + x^3 + 6x^2 - 6$



Follow-Up Questions:

1. What did you notice about the end behaviors of your even degree functions?

2. What did you notice about the end behaviors of your odd degree functions?

3. How do figure out the number of imaginary roots?

4. What did you notice about the number of imaginary roots?

5. What does the leading coefficient of a graph tell you?