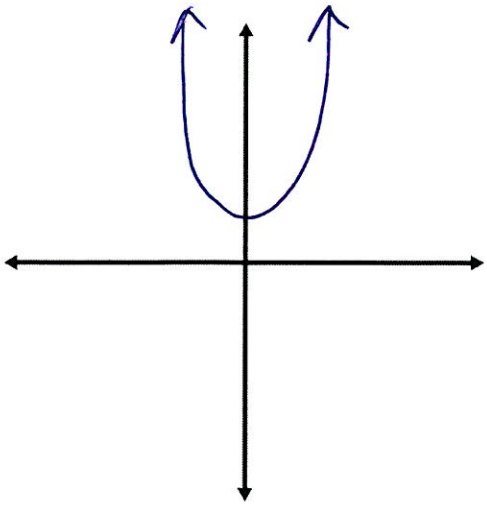
Key

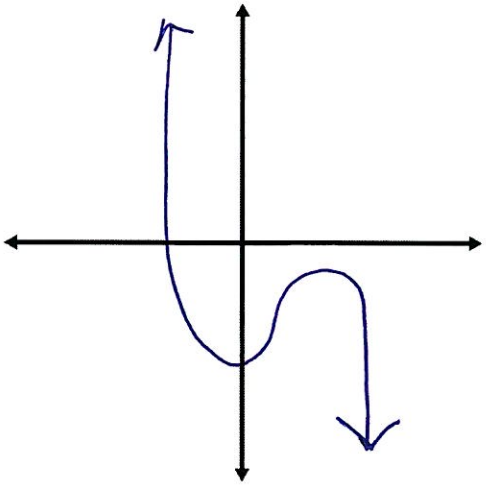
APR.B **Sketching Polynomials Exploration**

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

1. Degree 2, 0 Real Roots, LC+

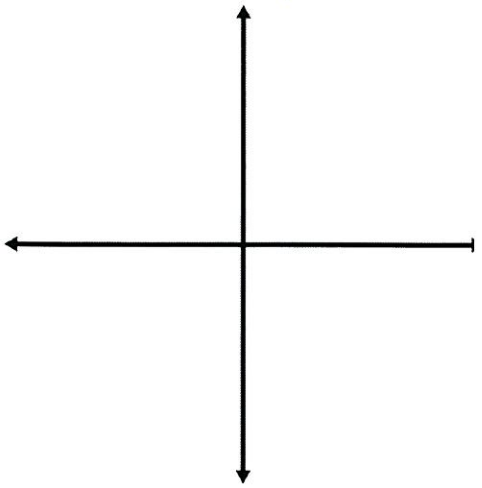


2. Degree 3, 1 Real Root, LC-

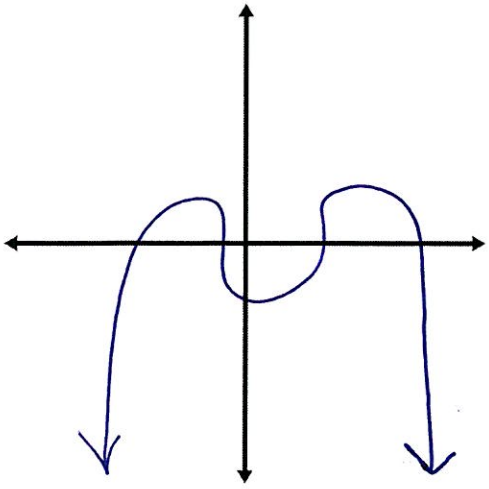


3. Degree 3, 2 Real Roots LC+

Not possible

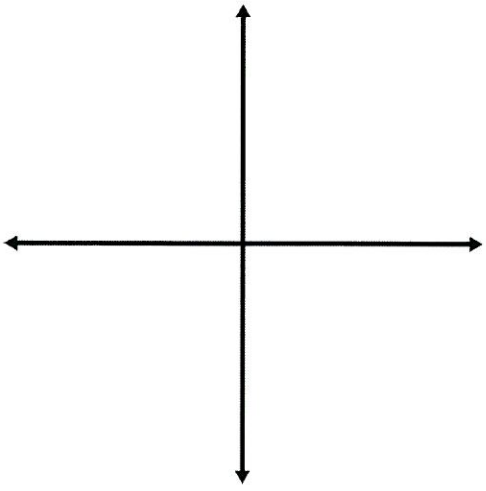


4. Degree 4, 4 Real Roots LC-

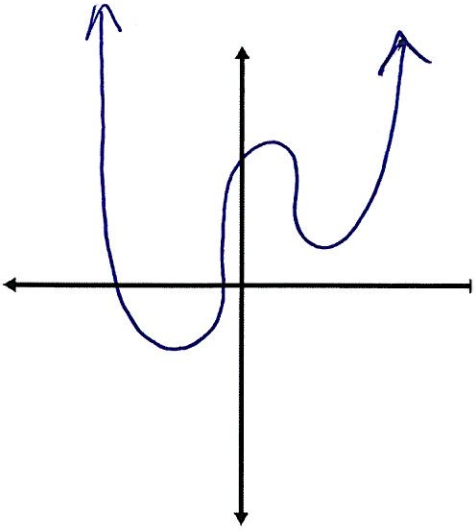


5. Degree 4, 1 Real Root LC+

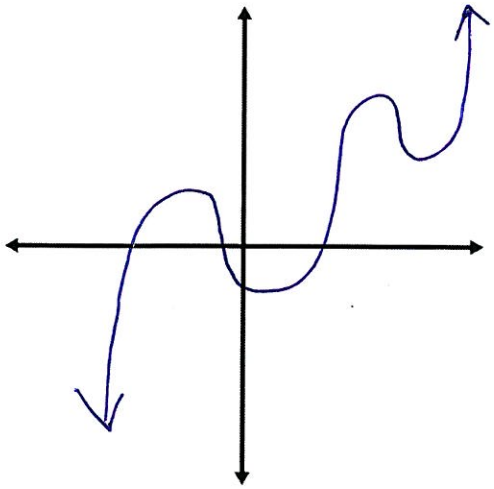
Not possible



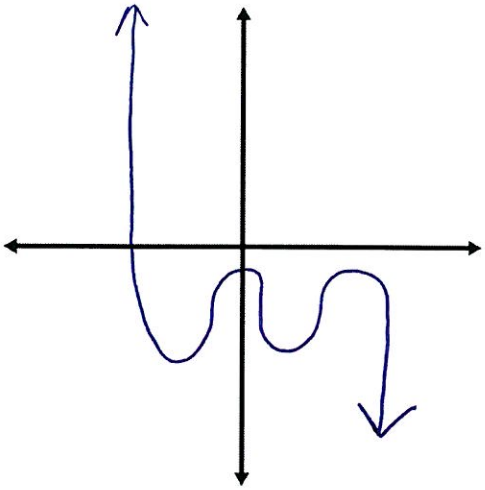
6. Degree 4, 2 Real Roots LC+



7. Degree 5, 3 Real Roots
LC+

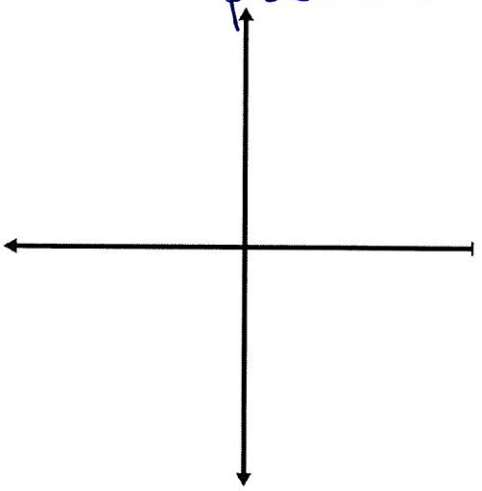


8. Degree 5, 1 Real Root
LC-

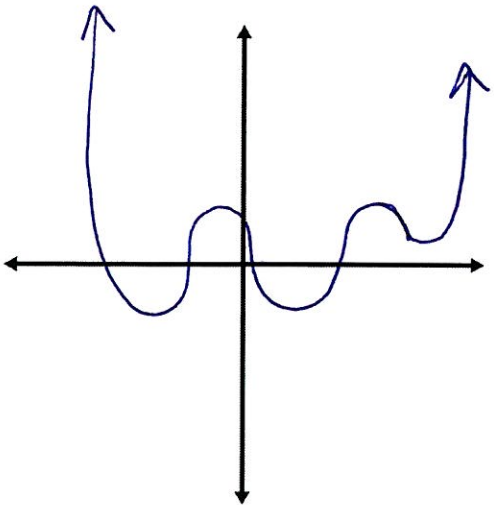


9. Degree 5, 4 Real Roots
LC+

Not possible

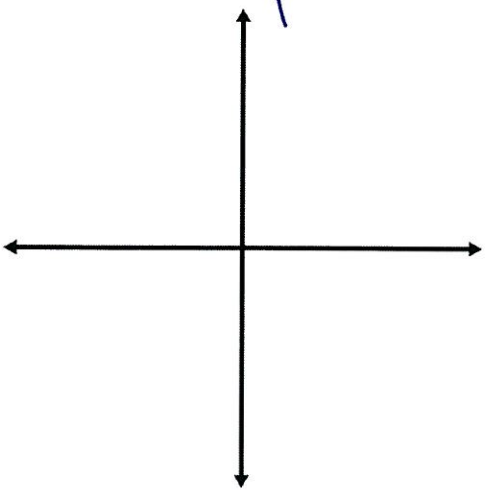


10. Degree 6, 4 Real Roots
LC+

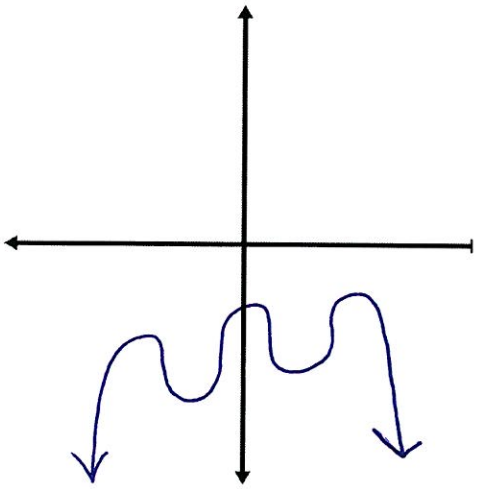


11. Degree 6, 1 Real Root
LC+

Not possible

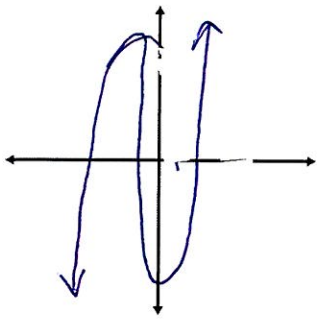


12. Degree 6, 0 Real Root
LC-

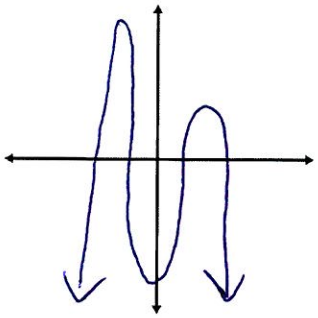


Graph the following using your graphing calculator. Sketch a picture of your graph on the axes provided.

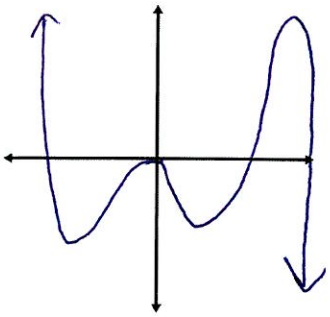
1. $y = 2x^3 + 8x^2 - 3x - 10$



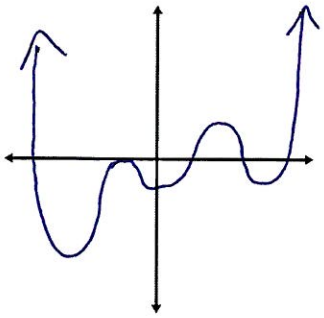
2. $y = -3x^4 - x^3 + 15x^2 - 12$



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?

point in the same direction

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

point in opposite directions

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

Degree - Real

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

always even

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

whereright side of the graph points