

Advanced Algebra
Solving and Graphing Polynomial Functions – Homework

For each of the polynomial functions listed, you must:

- List all the roots and x-intercepts. (Remember, only REAL roots get counted as x-intercepts.)
- List the y-intercept.
- Describe the end behavior.
- Sketch a possible graph for the function.

Some of the polynomials can be factored; others will require the use of the rational root theorem and synthetic division!

1. $f(x) = 2x^3 - 6x^2 - 20x$
2. $f(x) = 2x^3 + 3x^2 - 32x + 15$
3. $f(x) = x^4 - x^3 - 13x - 15$
4. $f(x) = -x^4 + 9x^2$
5. $f(x) = 3x^3 + x^2 - 75x - 25$
6. $f(x) = x^4 + 2x^3 + 5x^2 + 8x + 4$