Assignment 2C

For each polynomial function below, write in standard form, state the degree, find the y-intercept, find the number of *possible* zeros and turning points (a.k.a. extrema), and describe the end behavior *without graphing*. Then verify the end behavior with your graphing calculator and find the *actual* number of zeros and turning points of the function. *Sketch* a rough picture of your graph.
Write your answers as a complete thought (the first problem is modeled for you).

1. $y = 2x^3 - 2 + 3x^4 - 3x^2$

This polynomial has degree_____ with a

y-intercept of _____. There are _____

possible zeros and _____ possible turning points.

As $x \to -\infty, y \to$_____.
As $x \to \infty, y \to$_____.

This function actually has _____ zeros

and _____ turning points.

2. $y = -x^5 - 3x^6 - 4x^4 + 3x^5 + 10$

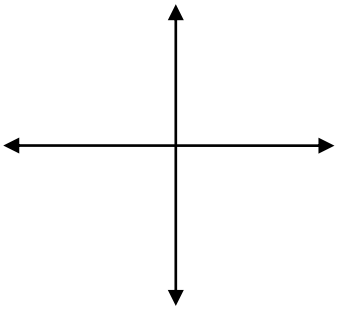
3. $y = 2 + x^4 - 10\,x^2 - 5\,x - 3\,x^3$

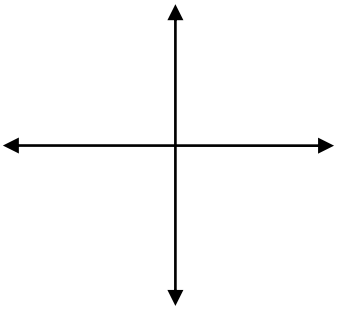
4. $y = 1 + 4x^3 - x^4 - 6x$

Use factoring to find the zeros of the functions (list their coordinates), state the multiplicity of each zero, then ***sketch*** a graph of each function with approximate scale. Check with your calculator.

5. $f(x) = x^3 - x^2 - 12\,x$

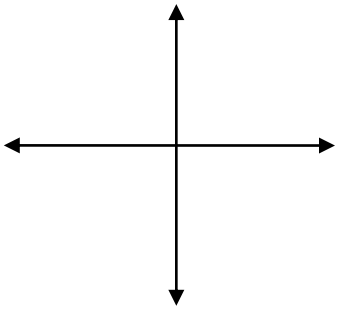
6. $g(x) = 3\,x^3 + 6\,x^2 + 3\,x$

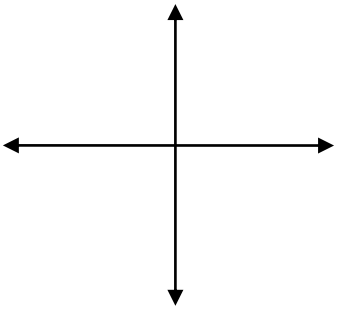




7. $h(x) = x^4 - x^2 - 12$

8. $j(x) = 2\,x^4 - 7\,x^2 - 4$





Use the problems above to solve these inequalities (note: the zeros above are the boundary points)

9. $x^3 - x^2 - 12\,x \geq 0$

10. $x^4 - x^2 - 12 < 0$