

Using the characteristics that we discussed in class today, fill in the blanks.

- 1) An _____ degree polynomial must have at least one real zero.
- 2) A polynomial function is written in _____ if its terms are written in descending order of exponents from left to right.
- 3) The _____ is the number in front of the term with the highest exponent in the polynomial.
- 4) A _____ is a polynomial with one term, a _____ has two terms, and a _____ has three terms.
- 5) It is possible for an _____ degree polynomial to have no real zeros.
- 6) The _____ is used to determine the end behavior of the graph of a polynomial function.

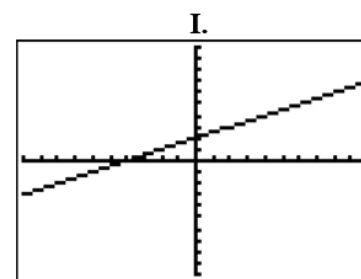
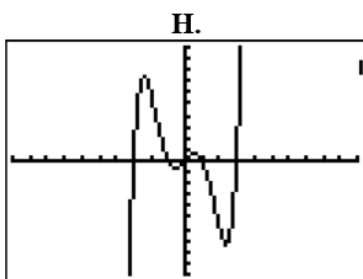
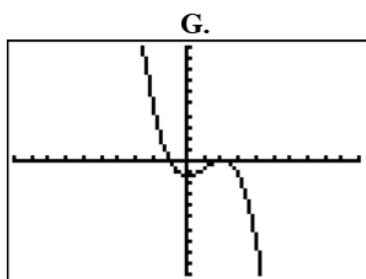
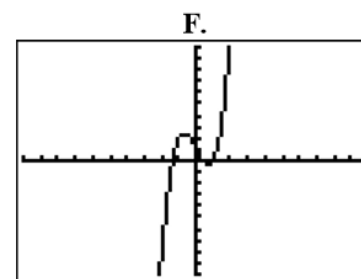
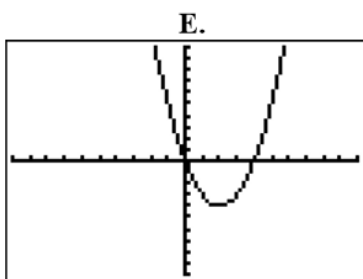
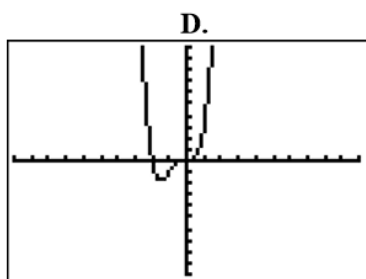
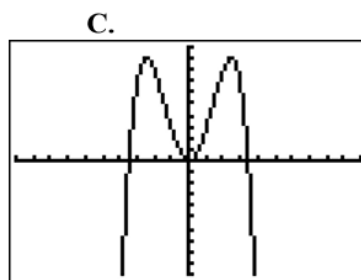
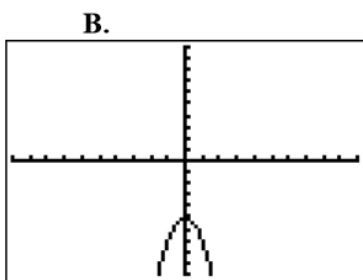
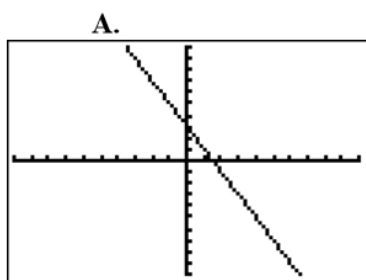
Write each polynomial in standard form and state the degree, type, leading coefficient, and the end behavior. The first example has been done for you.

	Standard Form	Degree	Classify by Degree	Classify by Number of Terms	LC	End Behavior
Example: $y = 7 - 3x$	$y = -3x + 7$	1	Linear	Binomial	-3	As $x \rightarrow -\infty, y \rightarrow \infty$ As $x \rightarrow \infty, y \rightarrow -\infty$
7) $f(x) = 2x - x^3 + 8$						
8) $y = 3x^2 + x^3 - (x^3 + x^2)$						
9) $y = (2x)^3 + 3x - 1$						
10) $f(x) = (x + 2)^2 + 3$						
11) $y = (2 + x)(2 - x) - 4$						
12) $f(x) = 3(x + 1)^2 - 3x^2$						
13) $g(x) = 2x - 2(x - 3)$						

Describe the end behavior of the graph of the polynomial function without graphing.

14) $y = 4x - 2 + 5x^5$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____	15) $y = -5x^3 + 2x$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____	16) $y = -2x - 12x^6 + 5$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____
17) $y = 6 - 2x + 6x^2 - 12x^9$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____	18) $y = 1 - x^6 - 1 + 2x^6$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____	19) $y = x(x - 2)(x + 3)(-2x - 5)$ As $x \rightarrow -\infty, y \rightarrow$ _____ and as $x \rightarrow \infty, y \rightarrow$ _____

Match the polynomial function with its graph without using a graphing calculator.



___ 20) $y = x^2 - 4x$

___ 21) $y = 2x^3 - 3x + 1$

___ 22) $y = -\frac{1}{3}x^3 + x^2 - \frac{4}{3}$

___ 23) $y = \frac{1}{2}x + 2$

___ 24) $y = -2x^2 - 5$

___ 25) $y = 3x^2 - \frac{1}{4}x^4$

___ 26) $y = 3 - 2x$

___ 27) $y = 2x^3 + x^4$

___ 28) $y = \frac{1}{5}x^5 - 2x^3 + \frac{9}{5}x$