IMPORTANT VOCABULARY for Unit 4:
(Answers to this section will be posted on Google Classroom. Use that to fill in this section.)

Monomial = one term; can be a number, a variable or the product of a number and a variable

EX: $4x^3y$ or -7 or x

Polynomial = the sum or difference of several monomials

EX: $5x^2 + 3x - 7$

Degree of a Polynomial = the largest exponent of a polynomial

EX: $5x^3 + 2x^{(7)} - 8x^4 + 12$

↑ 7th degree polynomial

Standard Form Polynomial = polynomial with terms written with exponents in decreasing order

EX: $2x^5 + 3x^4 - 4x^3 - 5x^2 + 6x - 7$

Factored Form Polynomial = polynomial written as the product of its factors

EX: $y = (x+3)(x-2)^2(2x-1)$

GRAPHS OF POLYNOMIALS:

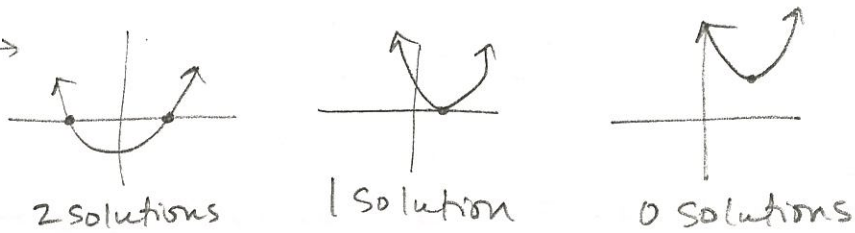
- The roots of a polynomial are the solutions found by setting the factors equal to zero.
- A polynomial has the same number of solutions/roots as its degree.
- The root is also an x-intercept on the graph of the polynomial.

Q: What is the maximum number of roots a cubic polynomial can have? 3

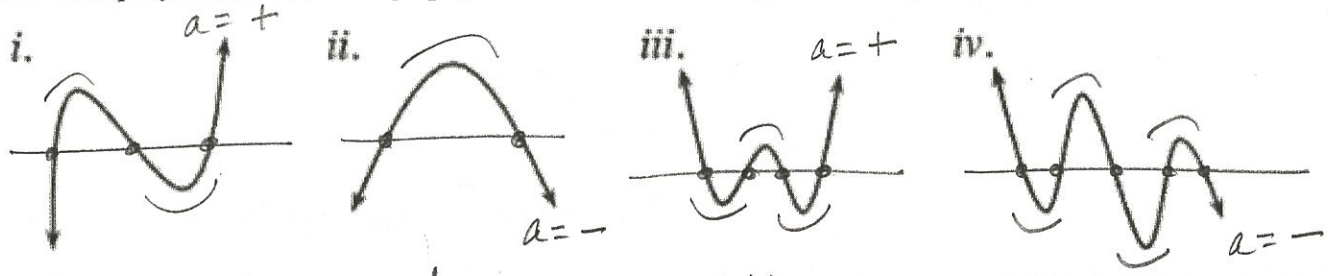
Q: What is the maximum number of roots a polynomial with the equation $y = x^8 - 12x^2 + x$ can have? 8

Q: Is it possible for the graph of a polynomial to have fewer x-intercepts than its degree? Explain.

YES. For $y = x^2$ →



Q: For each polynomial function graph, state the minimum degree each equation can have.



3rd degree (x^3) 2nd deg. (x^2) 4th deg (x^4) 5th deg. (x^5)

Q: How can you tell the minimum degree of a polynomial by the number of "bumps" on its graph?

turns (bumps) + 1 = degree

END BEHAVIOR:

what happens at the right end of the graph; it's dependent on "a"

ORIENTATION:

Right Arrow Points UP	Right Arrow Points DOWN
$a = +$ Ex: $y = +x^3$	$a = -$ Ex: $y = -x^2$

DEGREE:

Both Arrows Point in the SAME DIRECTION	Arrows Point in DIFFERENT DIRECTIONS
degree is EVEN	degree is ODD

$y = x^2$ $y = x^4$ $y = x^3$ $y = x^5$