

- 1) Polynomials \_\_\_\_\_ have the same domain.
- 2) Polynomials \_\_\_\_\_ have the same range.
- 3) Polynomials are \_\_\_\_\_ continuous.
- 4) Even degree polynomials \_\_\_\_\_ have ends pointing in different directions.
- 5) The degree of a polynomial is \_\_\_\_\_ negative.

# Describing Polynomials

U2C1

- Standard Form:** expand if needed, put terms in order by descending exponent
- Degree:** the highest whole number exponent in the polynomial in standard form, or the sum of the exponents of each factor in factored form
- Type:** (by degree) constant, linear, quadratic, cubic, nth-degree polynomial  
(by number of terms) monomial, binomial, trinomial, n-term polynomial
- Leading Coefficient:** the coefficient of the first term when written in standard form

|  | Standard Form               | Degree | Type | Leading Coefficient |
|--|-----------------------------|--------|------|---------------------|
|  | $y = (3x)^2 - 3x^3 + 1 - x$ |        |      |                     |
|  | $y = x^2 - 3(x+1) + 2x^2$   |        |      |                     |
|  | $y = x^2(x+1)^2$            |        |      |                     |

The Leading Coefficient Test determines the end behavior of a polynomial graph.

An \_\_\_\_\_ degree polynomial with a \_\_\_\_\_ leading coefficient, starts \_\_\_\_\_ and ends \_\_\_\_\_

$\left. \begin{matrix} x \rightarrow -\infty, y \rightarrow \end{matrix} \right\}$   $\left. \begin{matrix} x \rightarrow \infty, y \rightarrow \end{matrix} \right\}$

$y = x^2 - 3x - 1$   
 $y = x^4 - 4x^2 + 2$   
 $y = x^6 - 4x^4 + 2x^2 + 6$

An \_\_\_\_\_ degree polynomial with a \_\_\_\_\_ leading coefficient, starts \_\_\_\_\_ and ends \_\_\_\_\_

$\left. \begin{matrix} x \rightarrow -\infty, y \rightarrow \end{matrix} \right\}$   $\left. \begin{matrix} x \rightarrow \infty, y \rightarrow \end{matrix} \right\}$

$y = -x^2 + 3x + 1$   
 $y = -x^4 + 4x^2 - 2$   
 $y = -x^6 + 4x^4 - 2x^2 - 6$

An \_\_\_\_\_ degree polynomial with a \_\_\_\_\_ leading coefficient, starts \_\_\_\_\_ and ends \_\_\_\_\_

$\left. \begin{matrix} x \rightarrow -\infty, y \rightarrow \end{matrix} \right\}$   $\left. \begin{matrix} x \rightarrow \infty, y \rightarrow \end{matrix} \right\}$

$y = 2x - 3$   
 $y = x^3 - 2x + 2$   
 $y = x^5 - 3x^3 + 2x - 1$

An \_\_\_\_\_ degree polynomial with a \_\_\_\_\_ leading coefficient, starts \_\_\_\_\_ and ends \_\_\_\_\_

$\left. \begin{matrix} x \rightarrow -\infty, y \rightarrow \end{matrix} \right\}$   $\left. \begin{matrix} x \rightarrow \infty, y \rightarrow \end{matrix} \right\}$

$y = -2x + 3$   
 $y = -x^3 + 2x - 2$   
 $y = -x^5 + 3x^3 - 2x + 1$