

Chapter 2: Polynomials

CURIOSITY QUESTIONS:

1. How do statisticians use Polynomials?
2. How do the Engineers of different branches use Polynomials?
3. Where do we use Polynomials in our daily life?
4. Why do we learn Polynomials?
5. What is the difference between a 'Zero Polynomial' and 'Zero of a Polynomial'?

ANSWER GUIDE:

Think about:

1. What are the types of Polynomials?
2. What is a fifth degree Polynomial called?
3. What is the degree of a Zero Polynomial?
4. How many Zeroes, a polynomial of degree 'n' can have utmost?
5. What is the point of a polynomial?

CAR ENTIRELY DRAWN WITH CUBIC POLYNOMIALS



EXPERIENTIAL LEARNING:

ACTIVITY:

1. POLYNOMIAL DANCE

Link: <https://youtu.be/z8qz3AHnePs>

This video depicts a "Polynomial Dance" in which different polynomial curves have been shown by different dance movements.

From this video, students can learn to find out the number of zeros of the given polynomial.

2. Shape of a Quadratic Polynomial and its Zeroes.

Objective:

To draw the graph of a quadratic polynomial and Observe

1. The shape of the curve when the coefficient of x^2 is positive.
2. The shape of the curve when the coefficient of x^2 is negative.
3. Its number of zeroes.

Pre - requisite knowledge:

Knowledge of quadratic polynomial and their zeroes.

Materials required:

Graph paper, colour pencils, cardboard, gum.

Procedure:

Consider a quadratic polynomial $f(x) = ax^2 + bx + c$.

Let the equations be

a) $2x^2 + x - 1$ [when $a > 0$]

b) $x^2 - 6x + 9$ [when $a = 1$]

c) $-x^2 + 5x - 7$ [when $a < 0$]

- Find the ordered pairs $[x, f(x)]$ for different values of x .
- On a cardboard, paste a graph paper of convenient size.
- Plot the points on the graph paper.
- Repeat for second and third polynomials.

Observations:

1. The Shape of the curves obtained are either open upwards or open down words.
2. For $f(x) = 2x^2 + x - 1$, the coefficient of x^2 is 2 which is positive (greater than 0)
3. For $f(x) = x^2 - 6x + 9$, the coefficient of x^2 is 1 which is positive (greater than 0)
4. For $f(x) = -x^2 + 5x - 7$, the coefficient of x^2 is -1 , which is negative (less than 0)
5. The graph of $2x^2 + x - 1$, and $x^2 - 6x + 9$ open upwards.
6. The graph of $-x^2 + 5x - 7$ open down wards.

Conclusion:

From the above activity, we conclude that

- i) The shape of the quadratic polynomial $f(x) = ax^2 + bx + c$, opens upwards when 'a' is positive and opens downwards when 'a' is negative.
- ii) The maximum number of zeroes which a quadratic polynomial can have is 2.

Have you ever seen a car drawn with cubic polynomials?