

Polynomial

Objective :- To 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) The number of zeros in the polynomial.

Prerequisite Knowledge :-

- Understanding of quadratic polynomials.
- Knowledge of standard form of a quadratic polynomial $ax^2 + bx + c = 0$
- Basic graphing skills.
- Concept of zeros (roots) of a polynomial.

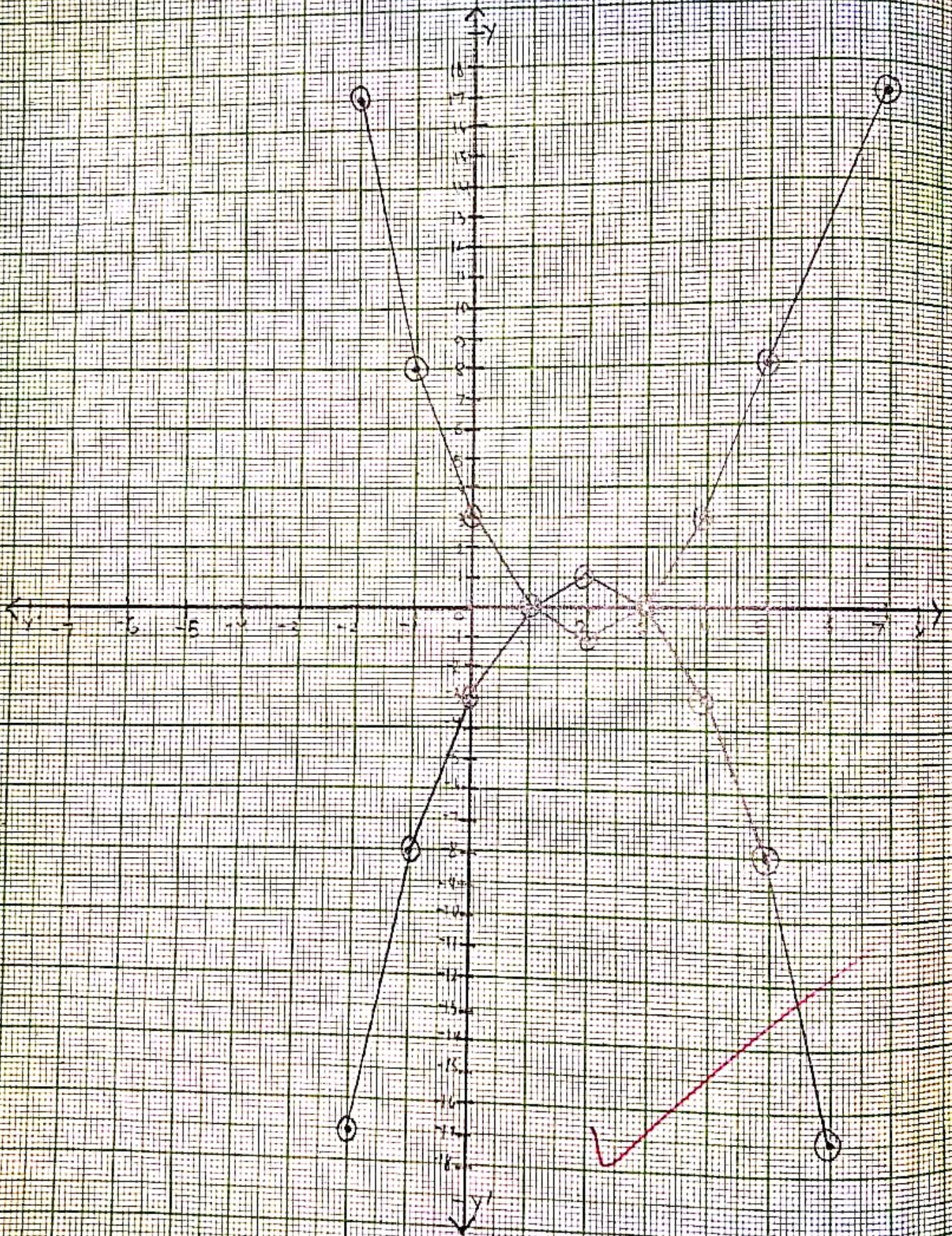
Materials Required :- Graph Paper, Ruler, pencil, Eraser and Geometry Box.

Procedure :-

1) Choose a polynomial -

■ Positive coefficient ' x^2 ' (ex $\rightarrow y = x^2 - 4x + 3$)

■ Negative coefficient ' x^2 ' (ex $\rightarrow y = -x^2 + 4x - 3$)



2) Plot points for positive coefficient polynomial.

value of x

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

-2

17

-1

8

0

3

1

0

2

-1

3

0

4

3

5

8

6

17

3) Plot points for negative coefficient Polynomial.

Value of x

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

-2

-15

-1

-8

0

-3

1

0

2

1

3

0

4

-3

5

-8

6

-15

Activity No. 3.Quadratic Polynomial

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4) Connect and Plot all the points on graph paper.

For $y = x^2 - 4x + 3$

Points : $(-2, 17), (-1, 8), (0, 3), (1, 0), (2, -1), (3, 0), (4, 3), (5, 8)$ and $(6, 17)$

For $y = -x^2 + 4x - 3$

Points : $(-2, -15), (-1, -8), (0, -3), (1, 0), (2, 1), (3, 0), (4, -3), (5, -8)$ and $(6, -15)$.5) Identify zeros :

$$x^2 - 4x + 3 = 0$$

$$\Rightarrow (x-1)(x-3) = 0$$

zeros : $x = 1$ and 3

$$-x^2 + 4x = 0$$

$$-(x^2 - 4x + 3) = 0$$

$$(x-1)(x-3) = 0$$

zeros : $x = 1$ and 3 .Observe these zeros with the graph where the curve meets x -axis.# Observation :-• For $y = x^2 - 4x + 3$

- Parabola opens upwards

- Curve intersects x -axis at two points indicating two zeros.• For $y = -x^2 + 4x - 3$

- Parabola opens downwards

- Curve intersects x -axis at two points indicating two zeros.

Remarks

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