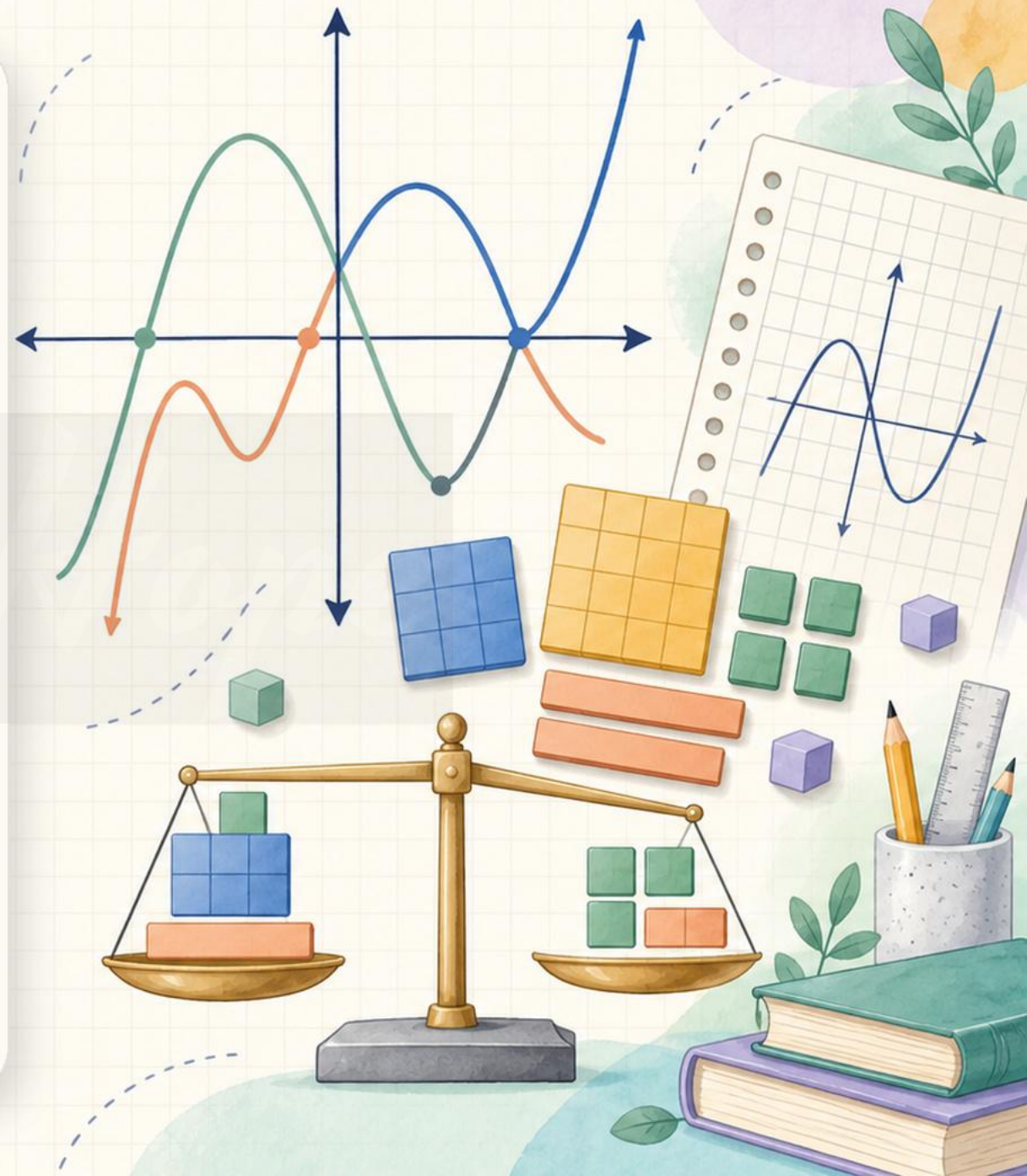


MATHEMATICS • CLASS 10

CHAPTER 2

Polynomials

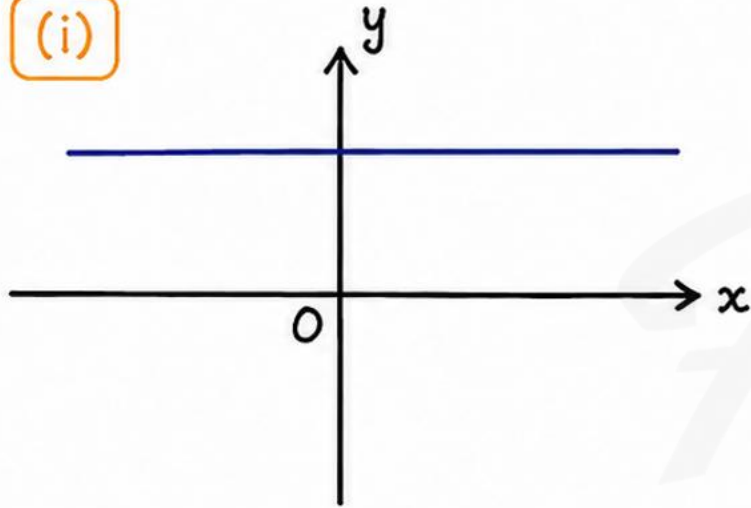
NCERT SOLUTIONS



EXERCISE 2.1 — Q1 (i)–(iii)

Q1. The graphs of $y = p(x)$ are given. Find the number of zeroes of $p(x)$ in each case.
Count the points where the graph meets the x -axis.

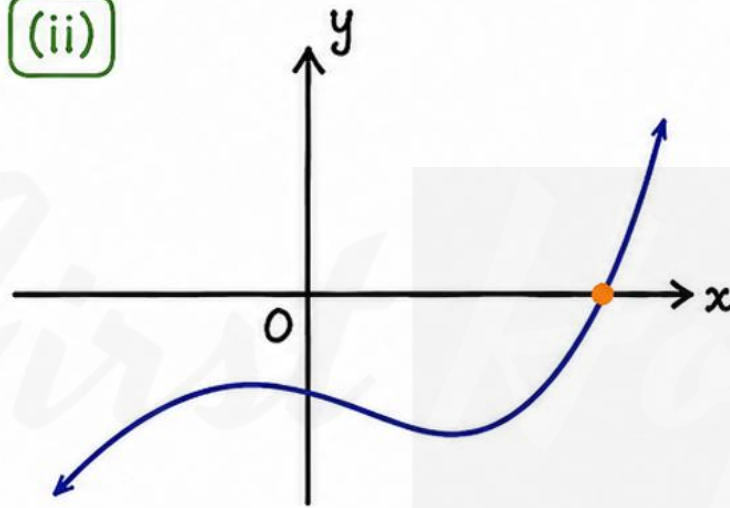
(i)



(i) The graph stays above the x -axis.
It does not meet the x -axis.

Number of zeroes = 0.

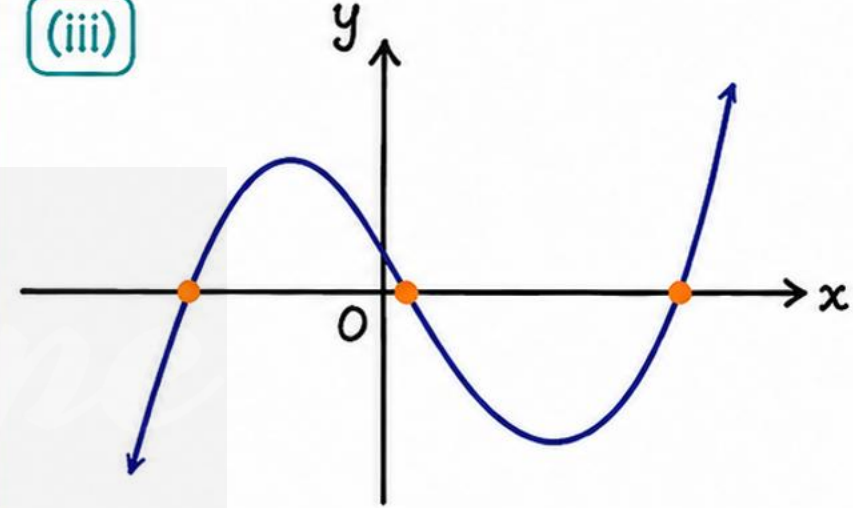
(ii)



(ii) The graph meets the x -axis at one point.

Number of zeroes = 1.

(iii)



(iii) The graph meets the x -axis at three different points.

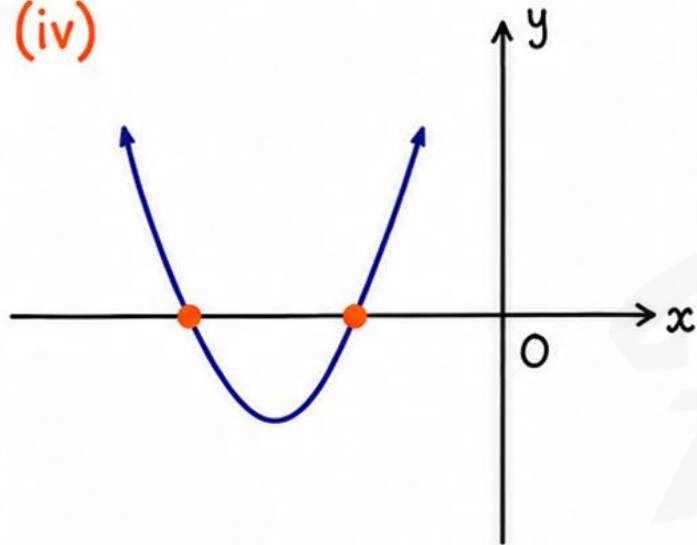
Number of zeroes = 3.

These are schematic redrawings of the given graphs.

EXERCISE 2.1 – Q1 (iv)–(vi)

Q1. Find the number of zeroes from the given graphs.

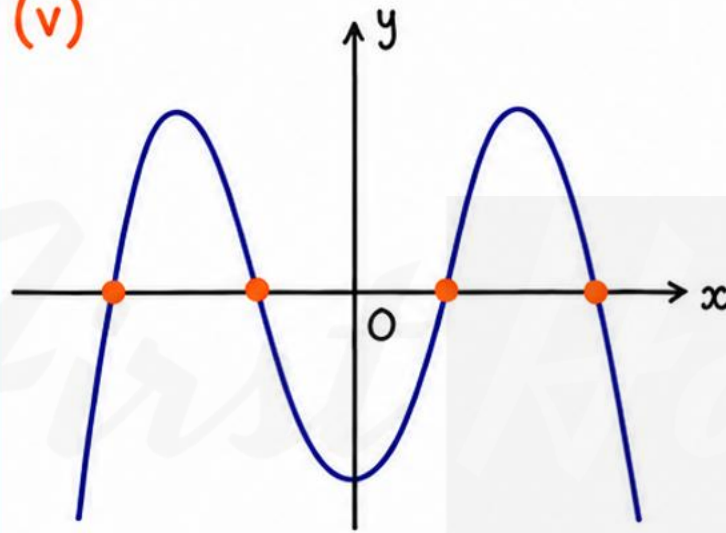
(iv)



- The graph cuts the x-axis at two points.

Number of zeroes = 2.

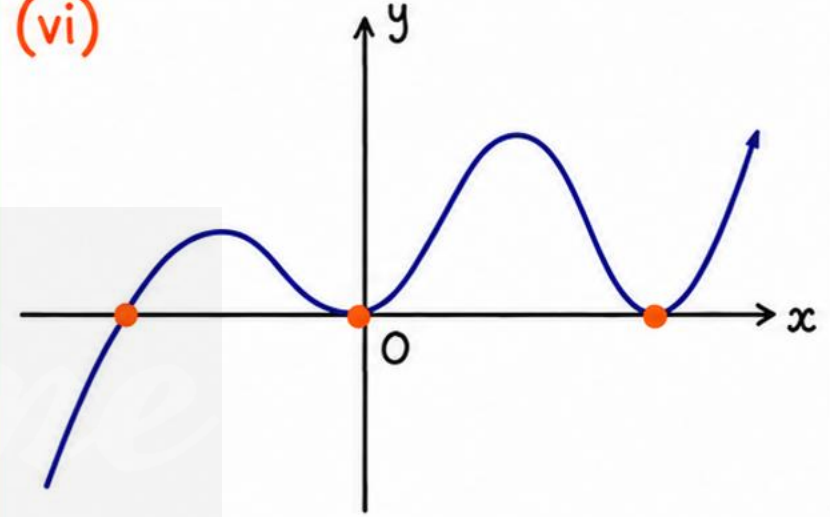
(v)



- The graph cuts the x-axis at four points.

Number of zeroes = 4.

(vi)



- The graph meets the x-axis at three distinct points.
- It crosses once and touches twice.

Number of zeroes = 3.

- A touching point also counts as a zero.

These are schematic redrawings of the given graphs.

EXERCISE 2.2 – Q1 (i) & (ii)

Find the zeroes and verify their relationship with the coefficients.

(i) $x^2 - 2x - 8$

$$\begin{aligned}x^2 - 2x - 8 &= x^2 - 4x + 2x - 8 \\&= x(x - 4) + 2(x - 4) \\&= (x - 4)(x + 2)\end{aligned}$$

Set each factor equal to zero.

Zeroes: 4 and -2.

Verification:

$$a = 1, \quad b = -2, \quad c = -8$$

$$\text{Sum: } 4 + (-2) = 2 = -b/a$$

$$\text{Product: } 4(-2) = -8 = c/a$$

Both relationships are verified.

(ii) $4s^2 - 4s + 1$

$$4s^2 - 4s + 1 = (2s - 1)^2$$

$$2s - 1 = 0 \Rightarrow s = \frac{1}{2}$$

Zeroes: $\frac{1}{2}$ and $\frac{1}{2}$ (equal).

Verification:

$$a = 4, \quad b = -4, \quad c = 1$$

$$\text{Sum: } \frac{1}{2} + \frac{1}{2} = 1 = -(-4)/4$$

$$\text{Product: } \left(\frac{1}{2}\right)\left(\frac{1}{2}\right) = \frac{1}{4} = c/a$$

Both relationships are verified.



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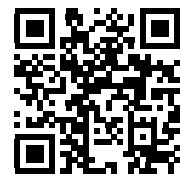


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