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NCERT Class 9 Solutions: Polynomials (Chapter 2) Exercise 2.2 – Part 1

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Q-1 Find the value of the polynomial $5x - 4x^2 + 3$ at

1. $x = 0$
2. $x = -1$
3. $x = 2$

Evaluating Polynomials

Evaluating a polynomial for a particular value involves replacing the value for the variable(s) involved.

Example:

Find the value of $2x^3 - 3x + 4$ when $x = -2$.

$$\begin{aligned} 2x^3 - 3x + 4 &= 2(-2)^3 - 3(-2) + 4 \\ &= 2(-8) + 6 + 4 \\ &= -6 \end{aligned}$$

Solution:

1. $p(x) = 5x - 4x^2 + 3$

$$p(0) = 5(0) - 4(0)^2 + 3$$

$$p(0) = 3$$

$$1. \quad p(x) = 5x - 4x^2 + 3$$

$$p(-1) = 5(-1) - 4(-1)^2 + 3$$

$$p(-1) = -5 - 4 + 3$$

$$p(-1) = -6$$

$$1. \quad p(x) = 5x - 4x^2 + 3$$

$$p(2) = 5(2) - 4(2)^2 + 3$$

$$p(2) = 10 - 16 + 3$$

$$p(2) = -3$$

Q-2 Find $p(0)$, $p(1)$ and $p(2)$ for each of the following polynomials:

$$1. \quad p(y) = y^2 - y + 1$$

$$2. \quad p(t) = 2 + t + 2t^2 - t^3$$

$$3. \quad p(x) = x^3$$

$$4. \quad p(x) = (x - 1)(x + 1)$$

Solution:

$$1. \quad p(y) = y^2 - y + 1$$

$$p(0) = (0)^2 - 0 + 1 = 1$$

$$p(1) = (1)^2 - 1 + 1 = 1$$

$$p(2) = (2)^2 - 2 + 1 = 4 - 2 + 1 = 2 + 1 = 3$$

$$1. \quad p(t) = 2 + t + 2t^2 - t^3$$

$$p(0) = 2 + 0 + 2(0)^2 - (0)^3 = 2$$

$$p(1) = 2 + 1 + 2(1)^2 - (1)^3 = 2 + 1 + 2 - 1 = 4$$

$$p(2) = 2 + 2 + 2(2)^2 - (2)^3 = 2 + 2 + 8 - 8 = 4$$

$$1. \quad p(x) = x^3$$

$$p(0) = (0)^3 = 0$$

$$p(1) = (1)^3 = 1$$

$$p(2) = (2)^3 = 8$$

$$1. \quad p(x) = (x - 1)(x + 1)$$

$$p(0) = (0 - 1)(0 + 1) = -1 \times 1 = -1$$

$$p(1) = (1 - 1)(1 + 1) = 0 \times 2 = 0$$

$$p(2) = (2 - 1)(2 + 1) = 1 \times 3 = 3$$