

## Exercise 6.1

1. Point out which of the following expressions are polynomials? Justify your answer.

(i)  $6x^2 - 3x + 1$  ✓

(ii)  $x^3 - x^2 + 2x - 2$  ✓

(iii)  $3x + \sqrt{x} - 5$  ✗

(iv)  $\frac{1}{x^2} + \frac{1}{x} - 7$  ✗

(v)  $\sqrt{5}x^3 + \frac{1}{3}x + 4$

(vi)  $\frac{3}{x^2} + 6$  ✗

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2. Write the following polynomials in standard form:

(i)  $5x^3 + 3x^4 + x^6 - 7x^2$

(ii)  $2x^3 + 5x - x^2 - x^5$

(iii)  $2x^4 - \frac{4}{3}x + 3x^2 + 2$

(iv)  $5x - \sqrt{2}x^2 + 1$

3. Write the degree of each of the following polynomials:

(i)  $2x^3 + 5x^2 - 3x + 1$

(ii)  $x^4 - \frac{2}{3}x^5 + 7x^2 - 1$

(iii)  $t + t^3 + 5t^2 - 2$

(iv)  $-2x^4 + 5x^3 - 7x + x^6$

(v)  $3y^2 + 4y + \sqrt{11}$

(vi)  $5x - 8x^2 + 3$

(vii)  $(y^3 - 2)(y^2 + 11)$  [CBSE 2011]

4. Classify the following polynomials as monomial, binomial and trinomial polynomials:

(i)  $-7x^2$

(ii)  $x^2 - 5$

(iii)  $x^{20} - 1$

(iv)  $\sqrt{3} + x - x^2$

(v)  $3 + x$

(vi)  $x^2$

5. Classify the following polynomials as linear, quadratic and cubic polynomials:

(i)  $3x + 5$

(ii)  $3x^2 + 2x - 1 = 0$

(iii)  $5x^3 - 2x^2 + 3x - 2$

(iv)  $2x$

## Answers

1. (i), (ii) and (v) are polynomials because the variables involved have only non-negative integral exponents whereas (iii), (iv) and (vi) are not polynomials because the variables involved have powers which are not non-negative integers.
2. (i)  $x^6 + 3x^4 + 5x^3 - 7x^2$  (ii)  $-x^5 + 2x^3 - x^2 + 5x$   
(iii)  $2x^4 + 3x^2 - \frac{4}{3}x + 2$  (iv)  $-\sqrt{2}x^2 + 5x + 1$
3. (i) 3 (ii) 5 (iii) 3 (iv) 6  
(v) 2 (vi) 2 (vii) 5
4. Monomials: (i), (vi); Binomials: (ii), (iii) and (v) and Trinomial: (iv)
5. (i) linear (ii) quadratic (iii) cubic (iv) linear

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