EduSahara™ Assignment

Name : Factor Theorem

Chapter : Polynomials

Grade : CBSE Grade IX

1. Find the value of k such that $kx^3 - 6x^2$ is exactly divisible by $(x-6)$

   (i) 2 (ii) 0 (iii) 1 (iv) 3 (v) -1

2. If $\frac{1}{2}$ and -5 are the zeros of the polynomial $f(x)=2x^4 - x^3 + bx^2 + 79x + a$, find the value of a and b

   (i) -37 , -29 (ii) -30 , -38 (iii) -39 , -31 (iv) -29 , -38 (v) -30 , -37

3. Find the value of a and b such that $x^4 + bx^3 + ax^2 - 25x + 50$ is exactly divisible by (x^2+4x-5)

   (i) -27 , 2 (ii) 0 , -28 (iii) -27 , 1 (iv) 2 , -26 (v) -26 , 1

4. If the polynomial $f(x)=3x^2 + kx + 15$ is exactly divisible by $(3x+3)$, find k

   (i) 20 (ii) 19 (iii) 15 (iv) 18 (v) 17

5. If the polynomials $ax^2 - 5x - 36$ and $4x^2 + ax - 12$ leave the same remainder when divided by $(x+2)$, find the value of a

   (i) 3 (ii) 4 (iii) 5 (iv) 6 (v) 8

6. Which of the following are true?

   a) A linear polynomial in one variable has only one root
   b) Zero of a polynomial and zero polynomial are synonymous
   c) Zero of a polynomial and root of the polynomial are synonymous
   d) If (x - a) is a factor of f(x), then f(a) = 0
   e) If (x + a) is a factor of f(x), then f(a) = 0
   f) A polynomial of degree n has atmost n zeros
   g) Zero of a polynomial is the value of the variable for which the polynomial value is zero

   (i) {e,c} (ii) {b,e,d} (iii) {a,c,d,f,g} (iv) {b,a} (v) {b,f,g}

7. If (x^2-1) is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, which of the following are true ?

   a) b + d = 0
   b) a + b + c = 0
   c) d + e = 0
   d) a + b + c + d + e = 0
   e) a + b + c = d + e
   f) a + c + e = 0

   (i) {a,d,f} (ii) {c,d} (iii) {e,b,f} (iv) {c,a,d} (v) {b,a}

8. Which of the following are true ?

a) If p(x) is divided by (x - a), the remainder is p(a)
b) If p(a) = 0, then (x + a) perfectly divides p(x)
c) If the degree of p(x) is less then the degree of d(x), we should not divide p(x) with d(x)
d) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor

(i) {a,c} (ii) {b,d,a} (iii) {b,c,a} (iv) {b,a} (v) {d,c}

9. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-16x^2-36x-18)$

(i) $(4x-6)(-4x+3)$ (ii) $(-5x+2)(-4x+3)$ (iii) $(4x+6)(-4x+3)$ (iv) $(4x+6)(-4x-3)$

(v) $(4x-6)(-4x-3)$

10. In which of the cases, $g(x)$ is a factor of $f(x)$?

(i) $f(x)=(-3x^3-5x^2+243x+405), g(x)=(-2x+1)$ (ii) $f(x)=(-3x^3-11x^2+14x+40), g(x)=(-x+2)$

(iii) $f(x)=(2x^3-x^2-162x+81), g(x)=(x+4)$ (iv) $f(x)=(-x^3-4x^2+81x+324), g(x)=(3x+5)$

(v) $f(x)=(-3x^3-26x^2+19x+90), g(x)=(-x+9)$

11. Which of the following polynomials is a multiple of $(x+5)$?

(i) $(3x^3+14x^2+21x+10)$ (ii) $(2x^3+5x^2+x-2)$ (iii) $(6x^3+x^2-4x+1)$ (iv) $(9x^3+57x^2+55x-25)$

(v) $(9x^3+30x^2+19x-10)$

12. Which of the following polynomials has $(x-1)$ as a factor ?

(i) $(2x^3-9x^2+13x-6)$ (ii) $(2x^3-4x^2-2x+4)$ (iii) $(4x^3-22x^2+36x-18)$ (iv) $(2x^3-6x^2-2x+6)$

(v) $(2x^3-13x^2+27x-18)$

13. If $f(x)=(9x^3+45x^2+74x+40)$ and $g(x)=(3x^3-8x^2-7x+12)$ have a common factor, find the common factor

(i) $(x-1)$ (ii) $(3x+5)$ (iii) $(x-3)$ (iv) $(3x+4)$ (v) $(x+2)$

14. Which of the following polynomials is not a multiple of $(3x-1)$?

(i) $(3x^2-7x+2)$ (ii) $(3x^2+2x-1)$ (iii) $(3x^2+11x-4)$ (iv) (x^2+5x+4) (v) $(3x^2-16x+5)$

Assignment Key

1) (iii)	2) (ii)	3) (iii)	4) (iv)	5) (iii)	6) (iii)
7) (i)	8) (i)	9) (iv)	10) (ii)	11) (iv)	12) (i)
13) (iv)	14) (iv)				