EduSahara™ Assignment

Name : Factor Theorem

Chapter : Polynomials

Grade : CBSE Grade IX

1. Find the value of k such that $4x^4 + 10x^3 - 4x^2 - 22x + k$ is exactly divisible by $(x+2)$

   (i) -9 (ii) -13 (iii) -11 (iv) -12 (v) -14

2. If $\frac{3}{2}$ and -4 are the zeros of the polynomial $f(x) = 2x^4 + bx^3 - 29x^2 - 18x + a$, find the value of a and b

   (i) 72 , 4 (ii) 73 , 3 (iii) 72 , 3 (iv) 4 , 73 (v) 2 , 71

3. Find the value of a and b such that $ax^4 + 32x^3 + bx^2 - 8x$ is exactly divisible by $(4x^2 - 1)$

   (i) 8 , -2 (ii) 8 , -1 (iii) 9 , -2 (iv) -3 , 7 (v) -1 , 9

4. If the polynomial $f(x) = 2x^2 + kx - 20$ is exactly divisible by $(2x - 5)$, find k

   (i) 0 (ii) 3 (iii) 6 (iv) 4 (v) 2

5. If the polynomials $ax^2 - 6x - 24$ and $-4x^2 + ax + 10$ leave the same remainder when divided by $(x+2)$, find the value of a

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

6. Which of the following are true?

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

   (i) {b,c,e,f,g} (ii) {a,b} (iii) {a,d,e} (iv) {d,c} (v) {a,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) a + b + c = 0
   b) b + d = 0
   c) a + b + c = d + e
   d) a + b + c + d + e = 0
   e) d + e = 0
   f) a + c + e = 0

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

8. Which of the following are true ?

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

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

9. Which of the following are possible values for the length and breadth of a rectangle whose area is $(10x^2-19x+6)$

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

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

(i) $f(x)=(-12x^3+52x^2-61x+15), g(x)=(x+1)$ (ii) $f(x)=(-6x^3-7x^2+1), g(x)=(-2x+9)$

(iii) $f(x)=(-8x^3+68x^2-174x+135), g(x)=(-2x+3)$ (iv) $f(x)=(6x^3-23x^2-20x+9), g(x)=(-2x+5)$

(v) $f(x)=(6x^3-11x^2-12x+5), g(x)=(2x+1)$

11. Which of the following polynomials is a multiple of $(x-3)$?

(i) $(6x^3+19x^2+x-6)$ (ii) $(6x^3-17x^2-33x+20)$ (iii) $(9x^3+48x^2+73x+30)$ (iv) $(6x^3-17x^2-5x+6)$

(v) $(3x^3+2x^2-41x-60)$

12. Which of the following polynomials has $(2x-3)$ as a factor ?

(i) $(4x^3-4x^2-13x-5)$ (ii) $(4x^3-12x^2-x+15)$ (iii) $(4x^3-21x-10)$ (iv) $(3x^3+10x^2+9x+2)$

(v) $(6x^3+17x^2+11x+2)$

13. If $f(x)=(2x^3-6x^2-20x+48)$ and $g(x)=(9x^3+24x^2-15x-18)$ have a common factor, find the common factor

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

14. Which of the following polynomials is not a multiple of $(3x-4)$?

(i) $(6x^2-5x-4)$ (ii) $(4x^2-1)$ (iii) $(6x^2-11x+4)$ (iv) $(3x^2-10x+8)$ (v) $(3x^2-19x+20)$

Assignment Key

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