EduSahara™ Assignment

Name : Factor Theorem

Chapter : Polynomials and Factorisation

Grade : SSC Grade IX

1. Find the value of k such that $4x^4 + 46x^3 + kx^2 + 254x + 120$ is exactly divisible by $(2x+3)$

   (i) 176 (ii) 175 (iii) 174 (iv) 178 (v) 177

2. If 1 and $(\frac{-3}{2})$ are the zeros of the polynomial $f(x) = 2x^4 - 11x^3 + 7x^2 + bx + a$, find the value of a and b

   (i) 25 , -25 (ii) -24 , 26 (iii) 27 , -23 (iv) -23 , 26 (v) -24 , 27

3. Find the value of a and b such that $ax^4 + bx^3 + 2x^2 + 14x - 6$ is exactly divisible by $(2x^2-2)$

   (i) 4 , -14 (ii) 5 , -14 (iii) -15 , 3 (iv) 4 , -13 (v) -13 , 5

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

   (i) 5 (ii) 9 (iii) 7 (iv) 10 (v) 8

5. If the polynomials $6x^2 + ax - 53$ and $ax^2 - x + 16$ leave the same remainder when divided by $(x-3)$, find the value of a

   (i) (-1) (ii) (-4) (iii) (-3) (iv) 0 (v) (-2)

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

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

7. 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(a) = 0, then (x + a) perfectly divides p(x)
   c) If p(x) is divided by (x - a), the remainder is p(a)
   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) {a,b,c} (ii) {b,d} (iii) {c,d} (iv) {a,c} (v) {a,d,c}

8. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-4x^2-2x+12)$

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

   (v) $(-2x-4)(2x+3)$

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

(i) $f(x)=(2x^3+25x^2+68x+45), g(x)=(3x+5)$ (ii) $f(x)=(6x^3+79x^2+250x+225), g(x)=(-3x+5)$

(iii) $f(x)=(-27x^3-18x^2+75x+50), g(x)=(3x+2)$ (iv) $f(x)=(-9x^3-72x^2+91x+90), g(x)=(2x+5)$

(v) $f(x)=(-6x^3-59x^2-20x+225), g(x)=(x+1)$

10. Which of the following polynomials is a multiple of $(3x-4)$?

(i) $(3x^3-10x^2+9x-2)$ (ii) $(6x^3+11x^2-26x-40)$ (iii) $(6x^3+17x^2-3x-20)$ (iv) $(9x^3-13x+4)$

(v) $(9x^3-33x^2+34x-8)$

11. Which of the following polynomials has $(2x-1)$ as a factor ?

(i) $(3x^3-x^2-22x+24)$ (ii) $(6x^3-11x^2-14x+24)$ (iii) $(8x^3+12x^2-2x-3)$ (iv) $(4x^3+20x^2+27x+9)$

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

12. If $f(x)=(18x^3+30x^2-52x-80)$ and $g(x)=(3x^3+10x^2-16x-32)$ have a common factor, find the common factor

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

13. Which of the following polynomials is not a multiple of $(2x+3)$?

(i) $(4x^2-4x-15)$ (ii) $(2x^2+11x+12)$ (iii) $(6x^2-x-15)$ (iv) $(3x^2+7x-20)$ (v) $(2x^2+5x+3)$

Assignment Key

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