EduSahara™ Assignment

Name : Factor Theorem

Chapter : Polynomials and Factorisation

Grade : SSC Grade IX

1. Find the value of k such that $8x^4 - 40x^3 + 34x^2 + 52x + k$ is exactly divisible by $(2x-5)$

   (i) -29 (ii) -31 (iii) -27 (iv) -33 (v) -30

2. If $\frac{3}{2}$ and -3 are the zeros of the polynomial $f(x) = 8x^4 + bx^3 - 54x^2 + ax - 108$, find the value of a and b

   (i) 163 , -16 (ii) 162 , -16 (iii) -15 , 163 (iv) 162 , -15 (v) -17 , 161

3. Find the value of a and b such that $8x^4 - 8x^3 + bx^2 + ax + 30$ is exactly divisible by $(2x^2-2)$

   (i) -39 , 7 (ii) 8 , -37 (iii) 9 , -38 (iv) -37 , 9 (v) 8 , -38

4. If the polynomial $f(x) = 3x^2 + 19x + k$ is exactly divisible by $(x+6)$, find k

   (i) 6 (ii) 8 (iii) 7 (iv) 4 (v) 5

5. If the polynomials $3x^2 + ax - 15$ and $ax^2 + x + 39$ leave the same remainder when divided by $(x-3)$, find the value of a

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

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

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

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 the degree of p(x) is less then the degree of d(x), we should not divide p(x) with d(x)
   c) If p(a) = 0, then (x + a) perfectly divides p(x)
   d) If p(x) is divided by (x - a), the remainder is p(a)

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

8. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-30x^2-54x-24)$

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

   (v) $(2x+1)(-5x+4)$

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

(i) $f(x)=(2x^3+x^2-93x+216), g(x)=(-x+3)$ (ii) $f(x)=(2x^3-5x^2-24x+27), g(x)=(x+7)$

(iii) $f(x)=(-x^3-9x^2-11x+21), g(x)=(x+8)$ (iv) $f(x)=(-2x^3+17x^2-42x+27), g(x)=(x+3)$

(v) $f(x)=(-x^3-10x^2-13x+24), g(x)=(-2x+9)$

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

(i) $(2x^3+13x^2+27x+18)$ (ii) $(2x^3+3x^2-8x-12)$ (iii) $(6x^3-23x^2+12x+20)$ (iv) $(6x^3+x^2-20x-12)$

(v) $(6x^3+x^2-32x-20)$

11. Which of the following polynomials has $(2x+4)$ as a factor ?

(i) $(6x^3+2x^2-24x-8)$ (ii) $(6x^3+12x^2-78x+60)$ (iii) $(6x^3+26x^2+32x+8)$ (iv) $(6x^3-6x^2-24x+24)$

(v) $(9x^3+39x^2-33x-15)$

12. If $f(x)=(12x^3-6x^2-24x+18)$ and $g(x)=(3x^3-3x^2-48x+48)$ have a common factor, find the common factor

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

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

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

Assignment Key

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