

EduSahara™ Learning Center Assignment**Grade : Class IX, CBSE****Chapter : Polynomials****Name : Factor Theorem**

-
- Find the value of k such that $kx^3 - 5x^2 - 8x + 12$
1. is exactly divisible by $(x + 2)$

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

- If 4 and $(-\frac{1}{2})$ are the zeros of the polynomial
2. $f(x) = 4x^4 - 32x^3 + 45x^2 + bx + a$, find the value of a and b

(i) 72, 21

(ii) 21, 71

(iii) 20, 72

(iv) 20, 71

(v) 70, 19

- Find the value of a and b such that
3. $x^4 + bx^3 + ax^2 - 13x - 6$ is exactly divisible by $(x^2 - 2x - 3)$

(i) 2, -6

(ii) -7, 2

(iii) -6, 1

(iv) -7, 1

(v) 0, -8

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

(i) 19 (ii) 15 (iii) 16 (iv) 17 (v) 18

- If the polynomials $ax^2 - 6x + 1$ and $3x^2 + ax - 44$
5. leave the same remainder when divided by $(x + 3)$, find the value of a

(i) (-6) (ii) (-3) (iii) (-4) (iv) (-2) (v) (-1)

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) Zero of a polynomial is the value of the variable for which the polynomial value is zero
 - e) If $(x - a)$ is a factor of $f(x)$, then $f(a) = 0$
 - f) If $(x + a)$ is a factor of $f(x)$, then $f(a) = 0$
 - g) A polynomial of degree n has atmost n zeros
- (i) $\{a, c, d, e, g\}$ (ii) $\{b, e, g\}$ (iii) $\{b, a\}$ (iv) $\{f, c\}$ (v) $\{b, f, d\}$

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

which of the following are true ?

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

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

8. Which of the following are true ?

- a) If $p(x)$ is divided by $(x - a)$, the remainder is $p(a)$
- 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) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor

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

Which of the following are possible values for the length and breadth

9. of a rectangle whose area is $(12x^2 + 18x - 12)$

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

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

- (i) $f(x) = (-2x^3 - 5x^2 + 31x + 84)$, $g(x) = (2x + 1)$

(ii) $f(x) = (-2x^3 + 3x^2 + 18x + 8)$, $g(x) = (3x + 5)$

(iii) $f(x) = (-6x^3 + 11x^2 + 47x + 20)$, $g(x) = (2x + 7)$

(iv) $f(x) = (-4x^3 + 57x + 28)$, $g(x) = (x + 2)$

(v) $f(x) = (6x^3 + 49x^2 + 128x + 105)$, $g(x) = (x + 3)$

11. Which of the following polynomials is a multiple of $(2x - 5)$?

(i) $(2x^3 + 5x^2 - 17x - 20)$

(ii) $(3x^3 + 8x^2 + 3x - 2)$

(iii) $(x^3 + 8x^2 + 19x + 12)$

(iv) $(3x^3 + 14x^2 + 13x - 6)$

(v) $(x^3 + 9x^2 + 26x + 24)$

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

(i) $(3x^3 + 4x^2 - 48x - 64)$

(ii) $(x^3 + 10x^2 + 29x + 20)$

(iii) $(x^3 + 5x^2 - 16x - 80)$

(iv) $(3x^3 + 22x^2 + 39x + 20)$

(v) $(3x^3 + 16x^2 + 25x + 12)$

13. If $f(x) = (12x^3 + 14x^2 - 22x - 24)$ and $g(x) = (18x^3 + 30x^2 - 4x - 16)$ have a common factor, find the common factor

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

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

(i) $(3x^2 + 8x - 3)$

(ii)

$$(x^2 + 4x + 3)$$

$$(iii) (x^2 - 1)$$

$$(iv) (3x^2 + 2x - 1)$$

$$(v) (x^2 + 5x + 4)$$

Assignment Key

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