EduSahara™ Learning Center Assignment

Grade : Class X, ICSE
Chapter : Factor Theorem
Name : Factor Theorem

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1. The remainder when $(-5j)$ is divided by (-4) is

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

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2. The remainder when $6v^2$ is divided by $(v -3)$ is

(i) 51 (ii) 55 (iii) 56 (iv) 53 (v) 54

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3. The remainder when $(7s +1)$ is divided by $(s +4)$ is

(i) (-26) (ii) (-29) (iii) (-27) (iv) (-24) (v) (-28)

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4. The remainder when $(-8q^2 -5q)$ is divided by $(q -4)$ is

(i) (-148) (ii) (-150) (iii) (-147) (iv) (-149) (v) (-146)

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5. The remainder when $(-5u^2 -5u -3)$ is divided by $(u -7)$ is

(i) (-283) (ii) (-284) (iii) (-282) (iv) (-281) (v) (-285)

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6. The remainder when $(-9d^4 -8d^3 -2d^2 -5d -1)$ is divided by $(d +2)$ is

(i) (-79) (ii) (-80) (iii) (-76) (iv) (-82) (v) (-78)

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7. Factorize $(9x^2 -33x +30)$

(i) $(3x -6)(2x -5)$

(ii) $(3x - 6)(3x - 5)$

(iii) $(3x - 6)(x - 5)$

(iv) $(3x - 6)(4x - 5)$

(v) $(3x - 6)(5x - 5)$

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8. Factorize $(x^3 - x^2 - 52x + 160)$

(i) $(x - 5)(-x + 8)(-2x - 4)$

(ii) $(x - 5)(2x + 8)(2x - 4)$

(iii) $(x - 5)\ 8\ (-4)$

(iv) $(x - 5)(x + 8)(x - 4)$

(v) $(x - 5)(4x + 8)(4x - 4)$

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9. Factorize $(x^4 + 5x^3 - 55x^2 - 185x - 126)$

(i) $(x + 1)(2x + 2)(2x + 9)(2x - 7)$

(ii) $(x + 1)(3x + 2)(4x + 9)(3x - 7)$

(iii) $(x + 1)(x + 2)(x + 9)(x - 7)$

(iv) $(x + 1)(-2x + 2)(-2x + 9)(-2x - 7)$

(v) $(x + 1)\ 2\ 9\ (-7)$

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10. The value of the polynomial $(-2k - 7)$ at $k = 1$ is

(i) -8 (ii) -7 (iii) -11 (iv) -9 (v) -10

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11. The value of the polynomial $(-x^2 + 8x - 7)$ at $x = (-2)$ is

(i) -28 (ii) -30 (iii) -27 (iv) -26 (v) -24

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12. The value of the polynomial $(5s^3 + 2s^2 + 2s)$ at $s = 1$ is

(i) 12 (ii) 7 (iii) 9 (iv) 8 (v) 10

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13. The value of the polynomial $(-3z^4 + 2z^3 + 7z^2 + z - 8)$ at $z = (-5)$ is

(i) -1966 (ii) -1963 (iii) -1960 (iv) -1962 (v) -1964

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14. Factorize $(x + 2xa - x + a - a - 42)$

2 2

(i) $(x - a + 6)(x + a + 7)$

(ii) $(x + a + 6)(x + a - 7)$

(iii) $(x + a - 7)(x - a + 6)$

(iv) $(x + a + 6)(x - a - 7)$

(v) $(x - a - 7)(x + a - 6)$

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15. Factorize $(x^3 + 3x^2a + 3xa^2 - x + a^3 - a)$

(i) $(x + a)(x + a - 1)(x + a + 1)$

(ii) $(x - a)(x + a - 1)(x - a + 1)$

(iii) $(x - a)(x - a - 1)(x + a + 1)$

(iv) $(x + a)(x + a - 1)(x - a + 1)$

(v) $(x + a)(x - a - 1)(x + a + 1)$

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16. Factorize $(24x^2 + 68xy + 40y^2)$

(i) $(4x + 8y)(6x + 5y)$

(ii) $(4x + 8y)(4x - 8y)$

(iii) $(4x + 8y)(6x - 5y)$

(iv) $(4x - 8y)(6x - 5y)$

(v) $(4x - 8y)(6x + 5y)$

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17. Find the value of k such that $8x^3 + kx^2 + 38x + 12$ is exactly divisible by $(2x + 1)$

(i) 33 (ii) 34 (iii) 31 (iv) 32 (v) 30

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18. If 5 and -4 are the zeros of the polynomial $f(x) = 2x^4 + ax^3 - 42x^2 + bx + 20$, find the value of a and b

(i) -1 , -18

(ii) -1 , -19

(iii) 0 , -19

(iv) -18 , 0

(v) -20 , -2

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19. Find the value of a and b such that
$bx^4 - 7x^3 - 3x^2 + 28x + a$ is exactly divisible by $(2x^2 - x - 10)$

(i) -20 , 3

(ii) 3 , -19

(iii) 1 , -21

(iv) -20 , 2

(v) -19 , 2

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20. If $\frac{2}{3}$ is the zero of the polynomial $f(x) = 6x^2 + kx + 10$, find k

(i) -18 (ii) -19 (iii) -16 (iv) -22 (v) -20

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

(i) 5 (ii) 6 (iii) 1 (iv) 3 (v) 4

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22. If the polynomial $x^4 + 7x^3 + ax^2 + bx - 90$ is divided by $(x - 5)$,
it leaves a remainder 1120 . If it is divided by $(x - 3)$,
it leaves a remainder 0 . Find the value of a and b

(i) 2 , -63

(ii) 1 , -62

(iii) -64 , 0

(iv) 1 , -63

(v) -62 , 2

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23. If the polynomials $ax^2 - 3x + 20$ and $3x^2 + ax - 8$

leave the same remainder when divided by $(x - 2)$, find the value of a

(i) (-2) (ii) (-5) (iii) (-4) (iv) (-8) (v) (-6)

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24. Which of the following are true?

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

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

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25. Which of the following are true?

a) πr^2 is a monomial
b) Every polynomial is a binomial
c) Degree of zero polynomial is zero
d) A binomial may have degree 3
e) A binomial has two and only two terms

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

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26. Given $f(t) = (-5t + 3)$, find $f(4)$

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

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27. Given $f(y) = (-6y^2 - 2y + 8)$, find $f(2)$

(i) -23 (ii) -19 (iii) -21 (iv) -20 (v) -18

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28. Given $f(x) = (5x^3 + 6x^2 - 7)$, find $f(5)$

(i) 765 (ii) 767 (iii) 768 (iv) 771 (v) 769

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29. Given $f(y) = (6y^4 + 6y^3 - 7y^2 + 3y - 3)$, find $f((-3))$

(i) 251 (ii) 249 (iii) 248 (iv) 247 (v) 250

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30. 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) b + d = 0
c) a + b + c = d + e
d) a + b + c = 0

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

f) d + e = 0

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

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31. 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) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor

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

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32. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-20x^2 - 17x + 10)$

(i) $(-4x + 5) (5x + 2)$

(ii) $(-4x - 5) (5x - 2)$

(iii) $(x - 2) (5x + 2)$

(iv) $(-4x - 5) (5x + 2)$

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

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

(i) $f(x) = (9x^3 - 27x^2 - 97x + 35)$, $g(x) = (-2x + 1)$

(ii) $f(x) = (x^3 - 9x^2 - x + 105)$, $g(x) = (-3x + 1)$

(iii) $f(x) = (2x^3 - 9x^2 - 38x + 21)$, $g(x) = (x + 3)$

(iv) $f(x) = (-6x^3 + 35x^2 - 26x + 5)$, $g(x) = (-x + 7)$

(v) $f(x) = (-3x^3 + 37x^2 - 117x + 35)$, $g(x) = (3x + 7)$

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34. Which of the following polynomials is a multiple of $(3x + 1)$?

(i) $(18x^3 + 33x^2 + 5x - 6)$

(ii) $(18x^3 + 27x^2 - 2x - 3)$

(iii) $(12x^3 + 20x^2 - x - 6)$

(iv) $(6x^3 + 7x^2 - 9x + 2)$

(v) $(6x^3 + 13x^2 - 4)$

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35. Which of the following polynomials has $(2x - 5)$ as a factor ?

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

(ii) $(9x^3 + 12x^2 - 3x - 6)$

(iii) $(6x^3 - 3x^2 - 24x - 15)$

(iv) $(9x^3 - 27x^2 + 26x - 8)$

(v) $(27x^3 - 27x^2 - 30x + 24)$

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36. Find the remainder when $(3x^2 - 26x + 16)$ is divided by $(x - 6)$

(i) -35 (ii) -32 (iii) -29 (iv) -31 (v) -33

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37. If $f(x) = (12x^3 - 24x^2 - 12x + 24)$ and $g(x) = (6x^3 + 16x^2 - 14x - 24)$ have a common factor, find the common factor

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

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38. Find the quadratic polynomial which when divided by $(2x - 6)$, $(2x + 5)$, $(2x + 2)$ leaves remainders of 40, (-15), (-12) respectively

(i) $(4x^2 - 2x - 30)$

(ii) $(4x^2 + 14x + 10)$

(iii) $(2x^2 + 9x - 5)$

(iv) $(2x^2 + 12x + 10)$

(v) $(4x^2 - 14x + 6)$

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

(i) $(3x^2 + 7x + 2)$

(ii) $(2x^2 - x - 10)$

(iii) $(6x^2 - 13x - 5)$

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

(v) $(x^2 + 6x + 8)$

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40. If the polynomial $ax^2 - 11x + b$ is divided by $(x + 1)$, it leaves a remainder 24. If it is divided by $(2x + 3)$, it leaves a remainder $33\frac{1}{4}$. Find the value of a and b

(i) 3 , 10

(ii) 4 , 10

(iii) 9 , 2

(iv) 11 , 4

(v) 3 , 11

Assignment Key

1) (v)
2) (v)
3) (iii)
4) (i)
5) (i)
6) (i)
7) (ii)
8) (iv)
9) (iii)
10) (iv)
11) (iii)
12) (iii)
13) (ii)
14) (ii)
15) (i)
16) (i)
17) (iv)
18) (ii)
19) (iv)
20) (ii)
21) (v)
22) (iv)
23) (ii)
24) (v)
25) (ii)
26) (iii)
27) (iv)
28) (iii)
29) (ii)
30) (i)
31) (iv)
32) (ii)
33) (iii)
34) (ii)
35) (iii)
36) (ii)
37) (iv)
38) (iii)
39) (iii)
40) (i)