doubtnut
India's Number 1 Education App

MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

FACTORISATION

Solved Examples

1. Factorise : $4m^3n^2 + 12m^2n^2 + 18m^4n^3$

Watch Video Solution

2. Factorise : $32(x+y)^2 - 2x - 2y$

Watch Video Solution

3. Factorise : $a^2 - ac + xc - xa + 6a - 6c$

Watch Video Solution

4. Factorise : $\frac{x^2}{9} + \frac{xy^2}{3} + \frac{y^4}{4}$

Watch Video Solution

5. Factorise : $36x^4 - 84x^2y^2 + 49y^4$

Watch Video Solution

6. Factorise : $81 - (x + y)^2$

Watch Video Solution

7. Factorise : $16x^4 - y^4$

Watch Video Solution

8. Factorise the following :

$x^2 + 7x + 10$

Watch Video Solution

9. Factorise the following :

$x^2 - 16x + 39$

Watch Video Solution

10. Factorise the following :

$x^2 - 9x - 36$

Watch Video Solution

11. Factorise the following :

$x^2 + 2x - 48$

Watch Video Solution

12. Factorise the following :

$6x^2 + 11x + 3$

Watch Video Solution

13. Factorise the following :

$2x^2 - 15x + 7$

Watch Video Solution

14. Factorise the following :

$5m^2 - 8m - 4$

Watch Video Solution

15. Factorise the following :

$3a^2 + 7ab - 6b^2$

Watch Video Solution

16. Factorise : $a^3 + \frac{8}{27}b^3$

Watch Video Solution

17. Factorise : $a^3 - b^3 + 4(a - b)$

Watch Video Solution

18. Factorise : $9x^2 + y^4 - 6xy^2 - z^4$

Watch Video Solution

19. Evaluate the following without directly multiplying :

102×105

Watch Video Solution

20. Evaluate the following without directly multiplying :

196×193

Watch Video Solution

21. Evaluate the following without directly multiplying :

97×103

Watch Video Solution

Question Bank 8

1. $28yz - 21y^3z^4 + 35y^2z^2$= _____

A. $7y^2x\left(4z - 3yz^3 + 5z\right)$

B. $7yz\left(4 - 3y^2z^3 + 5yz\right)$

C. $7yz\left(4yz - 3y^2z^2 + 5yz^2\right)$

D. $7y^2z^2\left(4 - 3z^2 + 5\right)$

Answer: B

Watch Video Solution

2. $(3a - 1)^2 - 6a + 2 =$ _____

A. $(3a - 1)(3a - 2)$

B. $(3a - 1)(3a + 2)$

C. $3(3a - 1)(a - 1)$

D. $(3a-1)(3a+3)$

Answer: C

Watch Video Solution

3. $2xya^2+10y+3xa^2+15$ = _____

A. $\left(2a^2+5\right)(2y+3x)$

B. $\left(xa^2+5\right)(2y+3)$

C. $\left(ya^2+3\right)(2x+5)$

D. $(xy+5)\left(2a^2+3\right)$

Answer: B

Watch Video Solution

4. $xy^2 - yz^2 - xy + z^2$ =_____

A. $(z-1)(xy-z)$

B. $(y-1)(xy-z^2)$

C. $(xy-1)(z^2-y)$

D. $(y+1)(xy-z^2)$

Answer: B

Watch Video Solution

5. $x^2 + (a + b + c)x + ab + bc =$ _____

A. $(x + a)(x + b + c)$

B. $(x + c)(x + a + b)$

C. $(x + b)(x + a + c)$

D. $(x + a)(x + b - c)$

Answer: C

Watch Video Solution

6. $9x^2 + 30x + 25$= _____

A. $(3x + 5)(3x - 10)$

B. $(3x + 5)(3x + 5)$

C. $(3x + 12)(3x + 13)$

D. $(9x + 5)(x + 5)$

Answer: B

Watch Video Solution

7. $16a^2 - 56ab + 49b^2 =$ _____

A. $(4a + 7b)(4b - 8b)$

B. $(2a + 7b)(2a + 8b)$

C. $(4a - 7b)(4a - 7b)$

D. $(4a + 7b)(4a + 7b)$

Answer: C

Watch Video Solution

8. $4x^2 - 6x + \frac{9}{4}$ = _____

A. $\left(2x^3 - \frac{3}{2}\right)\left(2x - \frac{3}{2}\right)$

B. $\left(2x^2 + \frac{3}{2}\right)\left(2x^2 - \frac{3}{2}\right)$

C. $\left(2x - \frac{3}{2}\right)\left(2x - \frac{3}{2}\right)$

D. $\left(4x^3 - \frac{9}{4}\right)(x - 1)$

Answer: C

Watch Video Solution

9. $4y - y^2 - 4 =$_____

A. $(y - 2)(y - 2)$

B. $(y - 2)(2 - y)$

C. $(y - 2)(y + 2)$

D. $(y + 2)(y + 2)$

Answer: B

Watch Video Solution

10. $121 - 16a^2b^2$ = _____

A. $(11 + 16ab)(11 - ab)$

B. $(11 + 16ab)(11 + ab)$

C. $(11 - 4ab)(11 + 4ab)$

D. $(11 - 4ab)(11 - 4ab)$

Answer: C

Watch Video Solution

11. $\frac{49a^2}{25b^2} - \frac{x^2}{100y^2} =$ -------

A. $\left(\frac{7a}{5b} + \frac{x}{10y}\right)\left(\frac{7a}{5b} - \frac{x}{y}\right)$

B. $\left(\frac{7a}{5a} + \frac{x}{10y}\right)\left(\frac{7a}{5b} + \frac{x}{y}\right)$

C. $\left(\frac{7a}{5b} + \frac{x}{10y}\right)\left(\frac{7a}{5b} - \frac{x}{10y}\right)$

D. $\left(\frac{7a}{5b} + \frac{x}{10y}\right)\left(\frac{7a}{5b} - \frac{x}{10y}\right)$

Answer: D

Watch Video Solution

12. $x^4 - 81$=____

A. $(x^2 + 81)(x^2 - 1)$

B. $(x^2 - 9)(x^2 - 9)$

C. $(x + 3)(x - 3)(x^2 + 9)$

D. $(x^2 - 9)(x + 3)$

Answer: C

Watch Video Solution

13. $27a^2x^2 - 48b^2$= _____

A. $(9ax - 16b)(3ax - 3b)$

B. $(3ax + 16b)(9ax - 3b)$

C. $3(3ax + 4b)(3ax - 4b)$

D. $3(3ax + 6b)(3ax - 4b)$

Answer: C

Watch Video Solution

14. $16(x+y)^2 - 4y^2$ =_____

A. $(4x-2y)(4x-2y)$

B. $(4x+2y)(4x-2y)$

C. $(4x-6y)(4x+2y)$

D. $(4x+2y)(4x+6y)$

Answer: D

Watch Video Solution

15. $9a^2 - (2b - c)^2$=_____

A. $(3a - 2b - c)(3a + 2b - c)$

B. $(3a + 2b - c)(3a - 2b + c)$

C. $(-3a + 2b + c)(3a + 2b - c)$

D. $(3a + 2b + c)(3a + 2b - c)$

Answer: B

Watch Video Solution

16. $9a^2 - 24ab + 16b^2 - 4x^2 =$ _____

A. $(3a + 4b - 2x)(3a + 4b + 2s)$

B. $(3a - 4b + 2x)(3a - 4b - 2x)$

C. $(3a - 4b - 2x)(3a + 4b + 2x)$

D. $(3a - 4b - 2x)(3a - 4b - 2x)$

Answer: B

Watch Video Solution

17. $x^2 + 6xy - z^2 + 9y^2 =$ _____

A. $(x + 3y - z)(x + 3y - z)$

B. $(x - 3y + z)(x - 3y + z)$

C. $(x + 3y + z)(x + 3y - z)$

D. $(x - 3y - z)(x - 3y - z)$

Answer: C

Watch Video Solution

18. $25a^2 - 4b^2 + 5a + 2b = \_\_\_\_\_$

A. $(5a + 2b - 1)(5a - 2b)$

B. $(5a + 2b + 1)(5a - 2b)$

C. $(5a + 2b)(5a - 2b - 1)$

D. $(5a + 2b)(5a - 2b + 1)$

Answer: C

Watch Video Solution

19. $x^2 + y^2 + 2xy + yz + zx$ = _____

A. $(x + y + 1)(x + z)$

B. $(x + y)(x + y + z)$

C. $(x + y - z)(x + 1)$

D. $(x + z - 1)(x + y)$

Answer: B

Watch Video Solution

20. $(a+b)^2-(b-a)^2$=_____

A. $(2a+2b)$

B. $(2a-2b)$

C. 4ab

D. $-4ab$

Answer: C

Watch Video Solution

21. $x^2 + 11x + 24 =$ _____

A. $(x + 6)(x + 4)$

B. $(x + 12)(x - 20)$

C. $(x + 12)(x + 2)$

D. $(x + 8)(x + 3)$

Answer: D

Watch Video Solution

22. $x^2 - 22x + 40 =$_____

A. $(x - 10)(x + 4)$

B. $(x + 2)(x - 20)$

C. $(x + 10)(x - 4)$

D. $(x - 20)(x - 2)$

Answer: C

Watch Video Solution

23. $m^2 - 5m - 36 =$_____

A. $(m + 9)(m - 4)$

B. $(m - 9)(m - 4)$

C. $(m + 9)(m + 4)$

D. $(m - 9)(m + 4)$

Answer: D

Watch Video Solution

24. $a^2 + 15a - 54 =$_____

A. $(a + 9)(x - 6)$

B. $(a - 18)(a + 3)$

C. $(a + 18)(a - 3)$

D. $(a - 27)(a + 2)$

Answer: C

Watch Video Solution

25. $2x^2 + 11x + 14 =$_____

A. $(2x + 2)(x + 7)$

B. $(2x + 7)(x + 4)$

C. $(2x + 7)(x + 2)$

D. $(2x + 4)(x + 7)$

Answer: C

Watch Video Solution

26. $2z^2 - 13z + 15$=_____

A. $(z - 5)(2z - 3)$

B. $(x + 5)(2z - 3)$

C. $(z + 5)(2z + 3)$

D. $(z - 5)(2z + 3)$

Answer: A

Watch Video Solution

27. $3x^2 + 11x - 4 =$ _____

A. $(3x - 1)(x + 4)$

B. $(3x - 1)(x - 4)$

C. $(3x + 1)(x - 4)$

D. $(3x + 1)(x + 4)$

Answer: A

Watch Video Solution

28. $6y^2 - 7y - 5$=_____

A. $(3y + 5)(2y - 1)$

B. $(3y - 5)(2y + 1)$

C. $(3y - 5)(2y - 1)$

D. $(3y + 5)(2y + 1)$

Answer: B

Watch Video Solution

29. $8x^3 + 1 =$_____

A. $(2x + 1)(4x^2 - 2x + 1)$

B. $(2x - 1)(4x^2 - 2x + 1)$

C. $(2x - 1)(4x^2 + 2x + 1)$

D. $(2x + 1)(4x^2 + 2x + 1)$

Answer: A

Watch Video Solution

30. $a^3 - 0.216 =$ _____

A. $(a - 0.6)\left(a^2 + 0.6a + 0.36\right)$

B. $\left(a^2 - 0.36\right)(a - 0.6a + 0.6)$

C. $(a - 0.6)\left(a^2 - 0.6a + 0.36\right)$

D. $\left(a^2 + 0.36\right)(a + 0.6a + 0.6)$

Answer: A

Watch Video Solution

31. Factorize: $a^3 + b^3 + a + b$

A. $(a + b + 1)(a^2 - ab + b^2)$

B. $(a + b)(a^2 - ab + b^2 + 1)$

C. $(a^2 + b^2)(a + b - ab + 1)$

D. $(a - b)(a^2 + ab + b^2 + 1)$

Answer: B

Watch Video Solution

32. $25x^2 - \left(x^2 - 36\right)^2$=_____

A. $(x-4)(x+4)(x+9)(x-9)$

B. $(x-4)(4+x)(x+9)(9-x)$

C. $(x+4)(x+4)(x-9)(x-9)$

D. $(x-4)(4-x)(x+9)(9+x)$

Answer: B

Watch Video Solution

33. $(6-x)^2-3x$=_____

A. $(x-9)(x-4)$

B. $(x-12)(x-3)$

C. $(x+12)(x-3)$

D. $(x-12)(x+3)$

Answer: B

Watch Video Solution

34. $x^4 - x^2y^2 - 72y^4$=_____

A. $(x^2 + 9y^2)(x^2 - 8y^2)$

B. $(x + 3y)(x + 3y)(x^2 + 8y^2)$

C. $(x + 3y)(x - 3y)(x^2 + 8y^2)$

D. $(x^2 - 9y^2)(x^2 - 8y^2)$

Answer: C

Watch Video Solution

35. $x^6 - 9^3$=_____

A. $\left(x^2+9\right)\left(x^4-9x^2-81\right)$

B. $\left(x^2-9\right)\left(x^4-9x^2+81\right)$

C. $(x+3)(x-3)\left(x^4+9x^2+81\right)$

D. $\left(x^2+9\right)\left(x^4+9x^2+81\right)$

Answer: C

Watch Video Solution

Self Assessment Sheet 8

1. Which one of the following statements is not correct ?

A. $a^2 + b^2$ cannot be factorized

B. $(a - 2c)$ is a factor of $a^2 - 4a^2c^2$

C. $2x + 7$ is a factor of $8x^3 - 27$

D. $\frac{3a^2 - 13a - 10}{9a^2 - 4} = \frac{a - 5}{3a - 2}$

Answer: C

Watch Video Solution

2. $p(q^2 + r^2) - q(r^2 + p^2)$ can be factorised as

A. $(P + q)(r^2 - pq)$

B. $(p - q)(r^2 - pq)$

C. $(p - q)(pq - r^2)$

D. $(p - qr)(p + q)$

Answer: B

Watch Video Solution

3. $\frac{a^3 - 64b^3}{a^2 + 3ab - 28b^2} = ?$

A. $\frac{a - b}{a + 3b}$

B. $\frac{a^2 + 4ab + 16b^2}{a + 7b}$

C. $(p - q)(pq - r^2)$

D. $(p - qr)(p + q)$

Answer:

Watch Video Solution

4. Factorise : $16(a-b)^3 - 24(a-b)^2$. The factors are :

A. $4(a-b)(2a-b-3)$

B. $8(a-b)^2(2a-2b-3)$

C. $8(a-b)(2a-b-4)$

D. None of these

Answer: B

Watch Video Solution

5. Factorise and simplify : $\frac{2x^5 - 2x}{2x^3 + 2x}$ .The answer is

A. $x^2 - 1$

B. $x^2 + 1$

C. $x - 1$

D. $x + 1$

Answer: A

Watch Video Solution

6. Factorise : $16 - x^2 - 2xy - y^2$ .The factors are

A. $(4 + x - y)(4 + x + y)$

B. $(4 - x - y)(4 - x + y)$

C. $(2 + x + y)(2 - x - y)$

D. $(4 + x + y)(4 - x - y)$

Answer: D

Watch Video Solution

7. The area of a rectangle is $12y^4 + 28y^3 - 5y^2$. If its length is $6y^3 - y^2$, then its width is

A. $y + 5$

B. $-2y + 5$

C. $-2y^2 + 5$

D. $2y + 5$

Answer: D

Watch Video Solution

8. Factorise : $n^3 - 3n - 2,$ given that $n + 1$ is a factor .The factors are

A. $(n+1)^2(n-2)$

B. $(n+1)(n-2)^2$

C. $(n-1)^2(n+2)$

D. None of these

Answer: A

Watch Video Solution

9. What are the possible expressions for the dimensions of the cuboid whose volume is $12kx^2 + 8kx - 20k$?

A. $k(x+1)$ and $(3x-5)$ units

B. $4k(x-1)$ and $(3x+5)$units

C. $k(x-1)$ and $(2y-5)$ units

D. $4k, 4(x+1)$ and $(3x+5)$ units

Answer: B

Watch Video Solution

10. Factorise : $8x^3 - 27y^3 - 2x + 3y$: The factors are

A. $(2x - 3y)(4x^2 + xy + 9y^2 - 1)$

B. $(2x - 3y)(4x^2 - 6xy + 9y^2)$

C. $(2x - 3y)(4x^2 + 3xy + 9y^2 - 1)$

D. $(2x - 3y)(4x^2 + 6xy + 9y^2 - 1)$

Answer: D

Watch Video Solution