MATHS

BOOKS - PEARSON IIT JEE FOUNDATION

EXPRESSIONS AND SPECIAL PRODUCTS

Example

1. Add 2x - 3y + z , 5y - x + 7z and 3x - y - 6z.

Watch Video Solution

2. Subtract 8p-5q + 7r from 5p- 9q + 3r.

Watch Video Solution

3. What should be subtracted from $x^3 - 7x^2 + 17x + 17$ so that the difference is a multiple of $x - 3$?

Watch Video Solution

4. Multiply $\left(5 - 3x - 4x^2\right)$ with 2x-3

Watch Video Solution

5. (a) Expand (x+4) (x+7)

(b) Expand (x+2) (x-5).

Watch Video Solution

6. Expand (x + 3) (x - 2) (x + 6).

Watch Video Solution

7. Expand $(3x + 4y)^2$.

Watch Video Solution

8. If $x + \frac{1}{x} = 3$, then find the value of $x^2 + \frac{1}{x^2}$.

Watch Video Solution

9. Expand $(8x - 7y)^2$.

Watch Video Solution

10. If $x - \frac{1}{x} = 5$, then find the value of $x^2 + \frac{1}{x^2}$.

A. 27

B. 28

C. 29

D. 30

Answer: A

Watch Video Solution

11. If $Y + \frac{1}{Y} = -2$, then find the value of $Y^{50} - \frac{1}{Y^{50}}$.

Watch Video Solution

12. If $x^2 + y^2 = 12xy$, then find the value of $\frac{x^2}{y^2} + \frac{y^2}{x^2}$.

Watch Video Solution

13. Simplify $(3x + 4y)^2 + (3x - 4y)^2$.

Watch Video Solution

14. Simplify $(11x + 3y)^2 - (11x - 3y)^2$.

Watch Video Solution

15. Simplify $(13x - 9y)(13x + 9y)$.

Watch Video Solution

16. Factorise $49x^2 - 16y^2$.

Watch Video Solution

17. (a) Factorise : $x^2 - (z - 5)x - 5z$

(b) Factorise : $x^2 + x - y + y^2 - 2xy$

Watch Video Solution

18. (a) Factorise : $9x^2 - 24xy + 16y^2$

(b) Factorise : $25x^2 + \frac{1}{25x^2} + 2$

Watch Video Solution

19. Divide $18x^4 - 27x^3 + 6x$ by 3x.

Watch Video Solution

20. Divide $10x^3 + 41x^2 - 4x - 15$ by $5x + 3$.

Watch Video Solution

21. (a) Find the HCF of $28x^4$ and $70x^6$.

(b) Find the HCF of $48x^2(x+3)^2(2x-1)^3(x+1)$ and $60x^3(x+3)(2x-1)^2(x+2)$.

Watch Video Solution

22. Find the zero of the polynomial $3x + 5$.

Watch Video Solution

23. Find the perimeter of a rectangle whose length (l) = 15 cm and breadth (b) = 12 cm .

Watch Video Solution

24. Find the area of the triangle with base (b) = 12 cm and the corresponding height (h) = 8 cm .

Watch Video Solution

Very Short Answer Type Questions

1. 5x + 10 y - 15 z = 5 (x + 2y - 3z)

Watch Video Solution

2. (x + 2) (x- 5) = $x^2 - 3x + 10$

Watch Video Solution

3. $(a + 2b)^2 - (a - 2b)^2 = 8ab$

Watch Video Solution

4. $9.2 \times 8.8 = 72.96$

Watch Video Solution

5. An equation which is true for all real values of its variables is called an identify .

Watch Video Solution

6. HCF of $12x^2yz$ and $16xyz^2$ is 4xyz.

Watch Video Solution

7. $\sqrt{\frac{x^2}{y^2z^6}} = xy^{-1}z^{-3}$

Watch Video Solution

8. $(a^2-1)+(a-1)=a+1$

Watch Video Solution

9. If a + b = 6 and $a^2 - b^2 = 24$, then $a - b = 4$.

Watch Video Solution

10. The constant term in the product of $(5x^2 - 7x + 4)(7x - 8)$ is 12.

Watch Video Solution

Fill In The Blanks

1. $5x^2(x - y) =$ _____

Watch Video Solution

2. $4x^2 - 4x + 1 = (\_\_\_\_\_)^2$

Watch Video Solution

3. (x + a) (x + b) = _____

Watch Video Solution

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

Watch Video Solution

5. $(a + 3b)^2 =$ _____

Watch Video Solution

Select The Correct Answer From The Given Options

1. If $\left(x + \frac{1}{x}\right) = 2$, then $x^2 + \frac{1}{x^2} =$ _____

A. 2

B. 4

C. 0

D. 3

Answer: A

Watch Video Solution

2. $(a-1)\left(a^2-2a+1\right)=$ _____

A. $(a-1)^2$

B. $(a-1)^3$

C. a^2-1

D. 1

Answer: B

Watch Video Solution

3. $(a+b)\left(\sqrt{a}+\sqrt{b}\right)\left(\sqrt{a}-\sqrt{b}\right) =$ _____

A. $(a+b)^2$

B. a^2-b^2

C. 1

D. $(a-b)^2$

Answer: B

Watch Video Solution

4. If a = 2 and b = -1 , then $a^2+b^2+2ab =$ _____

A. 9

B. 4

C. 2

D. 1

Answer: D

Watch Video Solution

5. (x + a) (x + b) = _____

A. $x^2 + (a + b)x + ab$

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

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

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

Answer: D

Watch Video Solution

Find The Degree Of The Following Expressions

1. The degree of $4x^2$ is

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

2. The degree of $-3x^3 + 5x^2 + 4$ is _____.

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

Watch Video Solution

3. The degree of xyz is _____.

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

4. The degree of x + y + z is _____.

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

5. The zero of x + 2 is _____

A. 0

B. 2

C. -2

D. 1

Answer: C

Watch Video Solution

6. The zero of x - 3 is _____

A. 0

B. 3

C. -3

D. 4

Answer: B

Watch Video Solution

7. The zero of 3x + 2 is _____.

A. 0

B. $\frac{2}{3}$

C. $\frac{-2}{3}$

D. $\frac{-1}{3}$

Answer: C

Watch Video Solution

Watch Video Solution

8. The zero of 5x - 3 is _____.

A. 3

B. 5

C. $\frac{3}{5}$

D. $\frac{5}{3}$

Answer: C

Watch Video Solution

9. The expanded form of (x + y) (x - y) is a _____

A. monomial

B. binomial

C. trinomial

D. None of these

Answer: B

Watch Video Solution

10. Find the degree of $\left(x^2 - x\right)^2$.

A. 3

B. 4

C. 5

D. 6

Answer: B

Watch Video Solution

Short Answer Type Questions

1. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

A + B

Watch Video Solution

2. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

A - B

Watch Video Solution

3. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

2A + 3B

Watch Video Solution

4. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

2A - 3B

Watch Video Solution

5. Find the products for the following :

(3x + 2) (x + 3)

Watch Video Solution

6. Find the products for the following :

(x-5) (x + 6)

Watch Video Solution

7. Find the product of $5x^2 - 7x + 6$ and 3x and verify it when x = -2 .

Watch Video Solution

8. Find the product of (3x - 7) (4x + 6) and verify it when x = 1.

Watch Video Solution

9. By using an appropriate identity , expand the following :

$(3x + 4y)^2$

Watch Video Solution

10. By using an appropriate identity , expand the following :

$\left(5x + \frac{1}{5x}\right)^2$

Watch Video Solution

11. By using an appropriate identity , expand the following :

$(x - 2y)^2$

Watch Video Solution

12. By using an appropriate identity , expand the following :

$$\left(3x - \frac{1}{3x}\right)^2$$

Watch Video Solution

13. By using an appropriate identity , expand the following :

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

Watch Video Solution

14. By using an appropriate identity , expand the following :

$$(x + y)(x - y)\left(x^2 + y^2\right)$$

Watch Video Solution

15. By using an appropriate identity , find the following :

$$(102)^2$$

Watch Video Solution

16. By using an appropriate identity , find the following :

$(54)^2$

Watch Video Solution

17. By using an appropriate identity , find the following :

$\left(10\frac{1}{4}\right)^2$

Watch Video Solution

18. By using an appropriate identity , find the following :

$(95)^2$

Watch Video Solution

19. By using an appropriate identity , find the following :

$(28)^2$

Watch Video Solution

20. By using an appropriate identity , find the following :

$\left(9\frac{1}{2}\right)^2$

Watch Video Solution

21. By using an appropriate identity , find the following :

89×111

Watch Video Solution

22. By using an appropriate identity , find the following :

92×108

Watch Video Solution

23. Find the HCF of the following :

$26x^2y^2z^2$ and $39x^3y^2z$

Watch Video Solution

24. Find the HCF of the following :

50 ab and 60 bc

Watch Video Solution

25. Factorise the following :

$x^2(x+y)+y^2(x+y)$

Watch Video Solution

26. Factorise the following :

$(3x + 2y)(a - b) + (3x - 2y)(a - b)$

Watch Video Solution

27. Find the value of 994×1006 by using an appropriate identity .

Watch Video Solution

28. Check whether the following are perfect squares or not :

(a) $64x^2 + 81y^2 - 144xy$

(b) $4x^2 + 8y^2 + 16xy$

Watch Video Solution

29. Divide $x^2 + 6x + 8$ by x + 2 and find the quotient .

Watch Video Solution

30. Factorise : $a^3 - ab^2 + a^2b - b^3$

Watch Video Solution

31. Find the HCF of $24abc^3$, $36ab^3c$, and $48a^3bc$.

Watch Video Solution

32. Factorise : $x^4 + y^4 - 2x^2y^2$

Watch Video Solution

33. If $y + \frac{1}{2y} = 4$, then find $y^2 + \frac{1}{4y^2}$

Watch Video Solution

34. Simplify : $\sqrt{\frac{169p^3q^3}{225pq^4}}$

Watch Video Solution

35. Simplify : $\frac{x^4 - y^4}{x^2 - y^2}$

Watch Video Solution

Easy Type Questions

1. Find the product of (3a + 4b) and (3a - 4b) and verify it when a = -1 and b = 1 .

Watch Video Solution

2. If $x + \frac{1}{2x} = 4$, then find $x^2 + \frac{1}{4x^2}$.

Watch Video Solution

3. If $5x - \frac{1}{2x} = 3$, then find $25x^2 + \frac{1}{4x^2}$.

Watch Video Solution

4. If $a + \frac{1}{a} = 6$, then find $a^4 + \frac{1}{a^4}$.

Watch Video Solution

5. Divide $\left(a^4 - b^4\right)$ by a - b and find the quotient and remainder .

Watch Video Solution

6. Divide $4x^3 + 8x^2 - 9x + 6$ by 2x + 3 and verify the division rule .

Watch Video Solution

7. Divide $x^3 + y^3$ by x + y and verify the division rule .

Watch Video Solution

8. Factorise the following :

$4x^2 + 8y^2 + 12xy$

Watch Video Solution

9. Factorise the following :

$(3x + 2y)^2 - (5x - 3y)^2$

Watch Video Solution

10. Factorise the following :

$a^4 - a - a^2 - 1$

Watch Video Solution

11. If $x - \frac{1}{x} = 2$, then find $x^4 + \frac{1}{x^4}$.

Watch Video Solution

12. If $36a^2 + \frac{1}{4a^2} = 31$, then find the value (s) of $6a - \frac{1}{2a}$.

Watch Video Solution

13. If m + n = 14 and mn = 48, then find the value (s) of m - n .

Watch Video Solution

Concept Application Level 1

1. Which of the following pairs is/are like terms ?

(A) x $(B)x^2$

(C) $3x^3$ $(D)4x^3$

A. A, B

B. B , C

C. C , D

D. A , C

Answer: C

Watch Video Solution

2. Degree of $5x^2y + 3xy$ is _____.

A. 3

B. 2

C. 4

D. 5

Answer: A

Watch Video Solution

3. Zero of $3x - \frac{3}{2}$ is _____

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. $\frac{1}{2}$

D. $\frac{1}{2}$

Answer: C

Watch Video Solution

4. If x , y , and z are variables , then x + y + z is a _____.

A. monomial

B. binomial

C. trinomial

D. None of these

Answer: C

Watch Video Solution

5. Which of the following is not an identify ?

A. $a^2 + 2ab + b^2 = (a + b)(a + b)$

B. $(x - y)^2 = x^2 - 2xy + y^2$

C. $(p + q)(p - q) = p^2 - q^2$

D. x + 2 = 3

Answer: D

Watch Video Solution

6. The zero of 2x + 3 is _____.

A. -2

B. -3

C. $-\frac{3}{2}$

D. $-\frac{2}{3}$

Answer: C

Watch Video Solution

7. The expanded form of $(x+y)^2$ is a _____.

A. monomial

B. binomial

C. trinomial

D. None of these

Answer: C

Watch Video Solution

8. $\sqrt{\frac{256a^4b^4}{625a^2b^2}} = \_\_\_\_\_$

A. $\frac{16b}{25a^2}$

B. $\frac{16b}{25a}$

C. $\frac{4b}{25a}$

D. $\frac{4b^2}{25a}$

Answer: B

Watch Video Solution

9. $\frac{a^2 - b^2}{a - b} = \_\_\_\_\_$

A. a + b

B. a - b

C. $a^2 + b^2$

D. $(a - b)^2$

Answer: A

Watch Video Solution

10. The following steps are involved in expanding $(x + 3y)^2$. Arrange them in sequential order from the first to the last .

(A) $(x + 3y)^2 = x^2 + 6xy + 9y^2$

(B) $(x + 3y)^2 = (x)^2 + 2(x)(3y) + (3y)^2$

(C) Using the identify $(a + b)^2 = a^2 + 2ab + b^2$, where a = x and b = 3y.

A. ACB

B. CAB

C. CBA

D. ABC

Answer: C

Watch Video Solution

11. The following steps are involved in finding the value of $(97)^2$ by using a suitable identify . Arrange them in sequential order from the first to the last .

(A) 10000 - 600 + 9 = 9409

(B) Using the identify $(a-b)^2 = a^2 - 2ab + b^2$, where a = 100 and b = 3.

(C) $(97)^2 = (100-3)^2$

(D) $(100-3)^2 = (100)^2 - 2(100)(3) + 3^2$

A. CABD

B. CADB

C. CBAD

D. CBDA

Answer: D

Watch Video Solution

12. The following steps are involved in finding the value of $a^4 + \frac{1}{a^4}$ when $a + \frac{1}{a} = 1$. Arrange them in sequential order from the first to the last .

(A) $a^2 + \frac{1}{a^2} + 2 = 1 \Rightarrow a^2 + \frac{1}{a^2} = -1$

(B) $\left(a^2\right)^2 + \left(\frac{1}{\left(a^2\right)^2}\right)^2 = 1^2$

(C) $\left(a + \frac{1}{a}\right)^2 = 1^2$

(D) $\left(a^2 + \frac{1}{a^2}\right)^2 = (-1)^2$

E $a^4 + \frac{1}{a^4} = -1$

A. CADBE

B. CDBAE

C. CBADE

D. CEDAB

Answer: A

Watch Video Solution

Watch Video Solution

13. The following steps are involved in the factorisation of $x^2(x-y)+(y-x)y^2$. Arrange them in sequential order from the first to the last .

(A) $(x-y)\left[x^2-y^2\right]$

(B) $x^2(x-y)-(x-y)y^2$

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

(D) $(x-y)[(x+y)(x-y)]$

A. ABDC

B. BADC

C. ABCD

D. CDAB

Answer: B

Watch Video Solution

14.

Column A	Column B
If $a^2 - b^2 = 16$ and $a - b = 2$, then $a + b$	(a) $3x^2 - x - 11$
The degree of $(x - a)(x - b)(x - c)(x - d)$	(b) $3x^2 - x + 5$
$4x^2 + 20xy + 25y^2$	(c) 8
$(5x^2 + 7x - 3) - (2x^2 + 8x - 8)$	(d) 4
	(e) $(4x + 5y)(x + 5y)$
	(f) $(2x + 5y)^2$

Watch Video Solution

Column A	Column B
$(3x^2 - 5) - (2x^2 - 5 + y^2)$	(a) $x^2 + xy + y^2$
$9x^2 - 16y^2$	(b) 2
15. $\frac{x^3 - y^3}{x - y}$	(c) $(9x + 16y)(9x - 16y)$
The degree of $(x + 2)(x + 3)$	(d) $x^2 - y^2$
	(e) 1
	(f) $(3x + 4y)(3x - 4y)$

Watch Video Solution

16. Which of the following pairs is/are like terms ?

(A) x $(B) x^2$

(C) $3x^3$ $(D) 4x^3$

A. A,B

B. B,C

C. C,D

D. A,C

Answer: C

Watch Video Solution

17. Degree of $5x^2y + 3xy$ is _____.

A. 3

B. 2

C. 4

D. 5

Answer: A

Watch Video Solution

18. Zero of $3x - \frac{3}{2}$ is _____

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. $\frac{1}{2}$

D. $\frac{1}{3}$

Answer: C

Watch Video Solution

19. If x , y , and z are variables , then x + y + z is a _____.

A. Monomial

B. Binomial

C. Trinomial

D. None of these

Answer: C

Watch Video Solution

20. Which of the following is not an identity ?

A. $a^2 + 2ab + b^2 = (a + b)(a + b)$

B. $(x - y)^2(p - q) = p^2 - q^2$

C. $(p + q)(p - q) = p^2 - q^2$

D. $x + 2 = 3$

Answer: D

Watch Video Solution

21. The zero of 2x + 3 is _____.

A. -2

B. -3

C. $-\frac{3}{2}$

D. $-\frac{2}{3}$

Answer: C

Watch Video Solution

22. The expanded form of $(x+y)^2$ is a _____.

A. monomial

B. binomial

C. trinomial

D. None of these

Answer: C

Watch Video Solution

23. $\sqrt{\frac{256a^4b^4}{625a^6b^2}} =$ _____

A. $\frac{16b}{25a^2}$

B. $\frac{16b}{25a}$

C. $\frac{4b}{25a}$

D. $\frac{4b^2}{25a}$

Answer: B

Watch Video Solution

24. $\frac{a^2 - b^2}{a - b}$ = _____

A. $a + b$

B. $a - b$

C. $a^2 + b^2$

D. $(a - b)^2$

Answer: A

Watch Video Solution

25. The following steps are involved in expanding $(x + 3y)^2$. Arrange them in sequential order from the first to the last .

(A) $(x + 3y)^2 = x^2 + 6xy + 9y^2$

(B) $(x + 3y)^2 = (x)^2 + 2(x)(3y) + (3y)^2$

(C) Using the identify $(a + b)^2 = a^2 + 2ab + b^2$, where a = x and b = 3y.

A. ACB

B. CAB

C. CBA

D. ABC

Answer: C

Watch Video Solution

26. The following steps are involved in finding the value of $(97)^2$ by using a suitable identify . Arrange them in sequential order from the first to the last .

(A) 10000 - 600 + 9 = 9409

(B) Using the identify $(a-b)^2 = a^2 - 2ab + b^2$, where a = 100 and b = 3.

(C) $(97)^2 = (100-3)^2$

(D) $(100-3)^2 = (100)^2 - 2(100)(3) + 3^2$

A. CABD

B. CADB

C. CBAD

D. CBDA

Answer: D

Watch Video Solution

27. The following steps are involved in finding the value of $a^4 + \frac{1}{a^4}$ when $a + \frac{1}{a} = 1$. Arrange them in sequential order from the first to the last .

(A) $a^2 + \frac{1}{a^2} + 2 = 1 \Rightarrow a^2 + \frac{1}{a^2} = -1$

(B) $\left(a^2\right)^2 + \left(\frac{1}{\left(a^2\right)^2}\right)^2 = 1^2$

(C) $\left(a + \frac{1}{a}\right)^2 = 1^2$

(D) $\left(a^2 + \frac{1}{a^2}\right)^2 = (-1)^2$

E $a^4 + \frac{1}{a^4} = -1$

A. CADBE

B. CDBAE

C. CBADE

D. CEDAB

Answer: A

Watch Video Solution

28. The following steps are involved in the factorisation of $x^2(x-y)+(y-x)y^2$. Arrange them in sequential order from the first to the last .

(A) $(x-y)\left[x^2-y^2\right]$

(B) $x^2(x-y)-(x-y)y^2$

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

(D) $(x-y)[(x+y)(x-y)]$

A. ABDC

B. BADC

C. ABCD

D. CDAB

Answer: B

Watch Video Solution

29. Match Column A with Column B

Column A	Column B
14. If $a^2 - b^2 = 16$ and $a - b = 2$, then $a + b$	(a) $3x^2 - x - 11$
15. The degree of $(x - a)(x - b)(x - c)(x - d)$	(b) $3x^2 - x + 5$
16. $4x^2 + 20xy + 25y^2$	(c) 8
17. $(5x^2 + 7x - 3) - (2x^2 + 8x - 8)$	(d) 4
	(e) $(4x + 5y)(x + 5y)$
	(f) $(2x + 5y)^2$

Watch Video Solution

30. Match Column A with Column B

Column A	Column B
18. $(3x^2 - 5) - (2x^2 - 5 + y^2)$	(a) $x^2 + xy + y^2$
19. $9x^2 - 16y^2$	(b) 2
20. $\dfrac{x^3 - y^3}{x - y}$	(c) $(9x + 16y)$ $(9x - 16y)$
21. The degree of $(x + 2)(x + 3)$	(d) $x^2 - y^2$
	(e) 1
	(f) $(3x + 4y)$ $(3x - 4y)$

Watch Video Solution

Level 2

1. If $a^2 - b^2 = 36$ and $a + b = 4$ then $(a - b)^2 =$ _____ .

A. 36

B. 9

C. 81

D. 144

Answer: C

Watch Video Solution

2. If $X = 3x^3 + 3x^2 + 3x + 3$ and Y = $3x^2 - 3x + 3$, then X - Y = _____.

A. $3x^3$

B. $3x^3 + 6x^2 + 6x + 6$

C. $6x^2 + 6x + 6$

D. $3x^3 + 6x$

Answer: D

Watch Video Solution

3. The sum of the values of the expression $2x^2 - 2x + 2$ when x = -1 and x = 1 is _____.

A. 6

B. 8

C. 4

D. 2

Answer: B

Watch Video Solution

4. If X = $2x^2$, $Y = 4x^6 - 6x^4$, then find the value of $\frac{Y}{X}$ when x = 1.

A. -4

B. 2

C. -1

D. 3

Answer: C

Watch Video Solution

5. If $x + \frac{1}{x} = 6$, then find $x^2 + \frac{1}{x^2}$.

A. 34

B. 36

C. 32

D. 38

Answer: A

Watch Video Solution

6. If x = -2 and $x^2 + y^2 + 3xy = -5$, then find y .

A. -2

B. 3

C. -4

D. 9

Answer: B

Watch Video Solution

7. Number of terms in the expresion (a + b) (c + d) is _____.

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

8. $46 \times 46 + 54 \times 54 + 2 \times 46 \times 54 = \_\_\_\_\_$

A. 9996

B. 10004

C. 9800

D. 10000

Answer: D

Watch Video Solution

9. $\frac{79^2 - 9^2}{89^2 - 9^2} = \_\_\_\_\_$

A. $\frac{5}{8}$

B. $\frac{13}{15}$

C. $\frac{6}{9}$

D. $\frac{11}{14}$

Answer: D

Watch Video Solution

10. $\sqrt{\frac{81(x+y)^2}{144(x-y)^2}} =$ _____

A. $\frac{9(x+y)^{\sqrt{2}}}{12(x-y)^{\sqrt{2}}}$

B. $\frac{9(x+y)^2}{12(x-y)^2}$

C. $\frac{3(x+y)}{4(x-y)}$

D. $9(x+y)/12(x-y)$

Answer: C

Watch Video Solution

11. If A = (3x + 6) and B = $2x^2 + 3x + 4$, then the degree of AB is _____

A. 4

B. 3

C. 2

D. 1

Answer: B

Watch Video Solution

12. Find the HCF of $18p^2qr$, $24pq^2r$ and $27pqr^2$.

A. 216 pqr

B. 3pqr

C. $216(pqr)^2$

D. $3(pqr)^2$

Answer: B

Watch Video Solution

13. Find the degree of $\left(x^3 - x^2\right)^2$.

A. 12

B. 4

C. 6

D. 9

Answer: C

Watch Video Solution

14. The value of 998^2 is _____

A. 996064

B. 996004

C. 998004

D. 998064

Answer: B

Watch Video Solution

15. $x^4 + y^4 + 2x^2y^2 = \_\_\_\_\_$

A. $(x + y)^4$

B. $\left(x^2 - y^2\right)^2$

C. $\left(x^2 + y^2\right)\left(x^2 - y^2\right)$

D. $\left(x^2 + y^2\right)^2$

Answer: D

Watch Video Solution

Watch Video Solution

16. If $3x + \frac{1}{x} = 6$, then find $9x^2 + \frac{1}{x^2}$.

A. 24

B. 27

C. 30

D. 33

Answer: C

Watch Video Solution

17. Which of the following is/are perfect squares ?

A. $16a^2 + 36b^2 - 48ab$

B. $9x^2 + 18xy + 9y^2$

C. Both (a) and (b)

D. Neither (a) nor (b)

Answer: C

Watch Video Solution

18. For what value of K is $16x^2 + 24xy + K$ a perfect square

A. $9y^2$

B. $18y^2$

C. $3y^2$

D. $16y^2$

Answer: A

Watch Video Solution

19. If $2y + \frac{1}{2y} = l$ and $2y - \frac{1}{2y} = m$, then $l^2 - m^2 =$ _____.

A. 2

B. 4

C. 6

D. 0

Answer: B

Watch Video Solution

Level 3

1. If $x^2 - y^2 = 28$ and x + y = 7 then $(x - y)^2 =$ _____ .

A. 8

B. 4

C. 16

D. 12

Answer: C

Watch Video Solution

2. Factorise $a^4 + a^3 + a^2 + a$.

A. $(a+1)\left(a^2+1\right)(a-1)$

B. $a(a+1)\left(a^2+1\right)$

C. $\left(a^2+1\right)\left(a^2+1\right)$

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

Answer: B

Watch Video Solution

3. Factorise $(2a+3b)^2 - (3a-2b)^2$.

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

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

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

D. $(5a + b)(5b + a)$

Answer: C

Watch Video Solution

4. What is the remainder when $\left(2x^3 + 3x + 7\right)$ is divided by (x + 2) ?

A. 3

B. 9

C. 7

D. 5

Answer: B

Watch Video Solution

5. What is the quotient when $\left(x^3+8\right)$ is divided by $\left(x^2-2x+4\right)$?

A. $x-2$

B. $x+2$

C. $x+1$

D. $x-1$

Answer: B

Watch Video Solution

6. Which of the following is a perfect square ?

A. $9x^2+24xy+4y^2$

B. $4x^2+12xy+3y^2$

C. $25x^2-10xy+4y^2$

D. $25x^2-30xy+9y^2$

Answer: D

Watch Video Solution

7. If x + y = 7 and xy = 2 , then $x^{\cdot}(2) - y^2 =$ _____$(x > y)$

A. $7\sqrt{46}$

B. $7\sqrt{44}$

C. $7\sqrt{41}$

D. $7\sqrt{43}$

Answer: C

Watch Video Solution

8. If $x + \frac{1}{x} = 2$, then $x^{100} - \frac{1}{x^{100}} =$ _____.

A. 0

B. 1

C. 2

D. 2100

Answer: A

Watch Video Solution

9. Factorise $x^2 + a^2 + 2a + 2x + 2ax.$

A. (x + a) (x + a + 2)

B. (x + a) (x - a - 2)

C. (x - a) (x + a + 2)

D. (x - a) (x - a + 2)

Answer: A

Watch Video Solution

10. For what value of p is $9x^2 + 18xy + p$ a perfect square ?

A. $9y^2$

B. $3y$

C. $6y^2$

D. $4y^2$

Answer: A

Watch Video Solution

11. If $2y + \frac{1}{2y} = 3$, then $16y^4 + \frac{1}{16y^4} =$ _____.

A. 81

B. 79

C. 49

D. 47

Answer: D

Watch Video Solution

12. If $496 \times 492 = x^2 - 4(x > 0)$, then x = _____.

A. 495

B. 494

C. 493

D. 496

Answer: B

Watch Video Solution

13. Factorise $x^4 + x^2 + 1$.

A. $\left(x^2 - x - 1\right)\left(x^2 + x - 1\right)$

B. $\left(x^2+x+1\right)\left(x^2-x+1\right)$

C. $\left(x^2-x+1\right)\left(x^2+x\right)$

D. $\left(x^2+x-1\right)\left(x^2-1\right)$

Answer: B

Watch Video Solution

14. If $x+\frac{1}{x}=a$ and $x-\frac{1}{x}=b$, then $a^2-b^2=$ _____.

A. 4

B. 3

C. 2

D. 1

Answer: A

Watch Video Solution

15. Factorise $y^2 + 2xy + 2xz - z^2$.

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

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

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

D. $(y + z)(y - z + 2x)$

Answer: D

Watch Video Solution

16. If A = $(x - a)(x - b)(x - c).....(x - z)$, then the number of terms in the expansion of (a + A) (b + A) (c + A) .... (z + A) is _____.

A. 1

B. 27

C. 56

D. 54

Answer: A

Watch Video Solution

17. $\left(4x^2 + 19x^2 + 25\right) \div \left(2x^2 - x + 5\right) =$ _____ .

A. $2x^2 - 9x + 5$

B. $2x^2 + 9x + 5$

C. $2x^2 + x + 5$

D. $2x^2 - x + 5$

Answer: C

Watch Video Solution

18. If P = $8x^4 + 6x^3 - 15x^2 + 27x - 20$ and Q = $2x^2 + 3x - 4$, then find the remainder when P is divided by Q.

A. 0

B. -1

C. -8

D. -4

Answer: A

Watch Video Solution

19. $x^3 + xy^2 - x^2y - y^3 =$ _____

A. $(x^2 + y^2)(x + y)$

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

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

D. $(x+y)(x-y)^2$

Answer: B

Watch Video Solution

20. If $y-\frac{1}{y}=3$, then find $y^4+\frac{1}{y^4}$.

A. 119

B. 117

C. 123

D. 125

Answer: A

Watch Video Solution

21. If $64x^2+\frac{1}{64x^2}=20$, then $8x-\frac{1}{4x}$ can be _____

A. 2

B. 8

C. 1

D. 4

Answer: D

Watch Video Solution

22. If $p + q = 15$ and $pq = 54$, then $p - q$ can be _____ .

A. 3

B. 5

C. 4

D. 6

Answer: A

Watch Video Solution

Watch Video Solution

23. Divide $x^2 + 7x + 12$ by x + 3 and find the quotient .

A. x + 4

B. $x - 4$

C. $2x + 4$

D. $2x - 4$

Answer: A

Watch Video Solution

24. What should be subtracted from $x^3 + 2x^2 - 3x + 10$, so that the difference is a multiple of $x - 2$?

A. 10

B. 20

C. 15

D. 30

Answer: B

Watch Video Solution

25. If C = (7x + 9) and D = $\left(4x^2 + 8x + 5\right)$, then the degree of the product CD is _____ .

A. 3

B. 4

C. 2

D. 1

Answer: A

Watch Video Solution

Assessment Tests Test 1

1. Factorise $a^3 - 3b^2 + 3a^2 - ab^2$

The following steps are involved in solving the above problem . Arrange them in sequential order .

(A) $(a+3)\left(a^2-b^2\right)$

(B) Rearrange the terms as $a^3 + 3a^2 - 3b^2 - ab^2$

(C) $a^2(a+3) - b^2(3+a)$

(D) $(a+3)(a+b)(a-b)$

A. BCDA

B. BCAD

C. BDCA

D. ABCD

Answer: B

Watch Video Solution

2. The following steps are involved in finding the value of $10\frac{1}{3} \times 9\frac{2}{3}$ by using an appropriate indentity . Arrange them in sequential order .

(A) $(10)^2 - \left(\frac{1}{3}\right)^2 = 100 - \frac{1}{9}$

(B) $10\frac{1}{3} \times 9\frac{2}{3} = \left(10 + \frac{1}{3}\right)\left(10 - \frac{1}{3}\right)$

(C)

$\left(10 + \frac{1}{3}\right)\left(10 - \frac{1}{3}\right) = (10)^2 - \left(\frac{1}{3}\right)^2 \left[\because (a+b)(a-b) = \left(a^2 - b^2\right)\right]$

(D) $100 - \frac{1}{9} = 99 + 1 - \frac{1}{9} = 99\frac{8}{9}$

A. BCDA

B. BACD

C. ACBD

D. BCAD

Answer: D

Watch Video Solution

3. If $a^2 + 16a + k$ is a perfect square , then find the value of k .

A. 4

B. 16

C. 36

D. 64

Answer: D

Watch Video Solution

4. If $x + \frac{1}{x} = 2$, then $x^{2013} - \frac{1}{x^{2012}} =$ _____.

A. 2

B. 1

C. 0

D. -1

Answer: C

Watch Video Solution

5. $(2x - 6y)^2 - (6y + 8x)^2 =$ _____

A. (5x) (3x + 6y)

B. $-4(5x)(3x - 6y)$

C. $-12(5x)(x + 2y)$

D. $-6(5x)(x - 2y)$

Answer: C

Watch Video Solution

6. The HCF of $64x^6y^4$, $48x^4y^8$, and $54x^5y^4$ is _____.

A. $2x^4y^4$

B. $6x^2y^2$

C. $8x^4y^4$

D. $8x^2y$

Answer: A

Watch Video Solution

7. Factorise $12a^3b^3 - 3ab$.

A. $3\left(a^2b^2 - 1\right)$

B. $3ab(a - b)$

C. $3ab(2ab + 1)(2ab - 1)$

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

Answer: C

Watch Video Solution

8. $(a^5 - a^3) \div (a^2 + a) =$ _____

A. $a^2(a + 1)$

B. $a(a - 1)$

C. $a^2(a - 1)$

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

Answer: C

Watch Video Solution

9. If $3x - \frac{1}{2x} = 3$, then find the value of $\frac{36x^4 + 1}{4x^2}$.

A. 9

B. 12

C. 15

D. 6

Answer: B

Watch Video Solution

10. Find the square root of $3^{6n^2}(36)^{2a}(16)^b$.

A. $3^{3n^2}6^{2a}2^{2b}$

B. $3^{6n}6^n4^b$

C. $3^{3n^2}6^a4^b$

D. $3^{6n}6^a4^{2b}$

Answer: A

Watch Video Solution

11.

$$\frac{x^4}{4}+\frac{y^3}{3}-\frac{3z^2}{5}+\frac{x^4}{3}-\frac{3y^3}{5}+\frac{z^2}{4}-\frac{3x^4}{5}+\frac{y^3}{4}+\frac{z^2}{3}=\_\_\_\_\_.$$

A. $\frac{-1}{60}\left(x^4+y^3+z^2\right)$

B. $\frac{1}{60}\left(x^4-y^3+z^2\right)$

C. $\frac{x^4+y^3+z^2}{60}$

D. $\frac{x^4+y^3-z^2}{60}$

Answer: A

Watch Video Solution

12.

$\text{Column} A$	$\text{Column} B$
$225x^2-625y^2=$	$(a)25(x-2)(x-2)$
$x^2-x-y-y^2=$	$(b)25(3x-5y)(3x+5y)$
$x^2-x-y^2+y=$	$(x+y)(x-y-1)$
$25x^2-100x+100=$	$(d)(x-y)(x+y-1)$
	$(e)(x+y)(x+y-1)$

Watch Video Solution

13. Factorise $a^3-3b^2+3a^2-ab^2$

The following steps are involved in solving the above problem . Arrange

them in sequential order .

(A) $(a+3)\left(a^2-b^2\right)$

(B) Rearrange the terms as $a^3+3a^2-3b^2-ab^2$

(C) $a^2(a+3)-b^2(3+a)$

(D) $(a+3)(a+b)(a-b)$

A. BCDA

B. BCAD

C. BDCA

D. ABCD

Answer: B

Watch Video Solution

14. The following steps are involved in finding the value of $10\frac{1}{3}\times 9\frac{2}{3}$ by using an appropriate indentity . Arrange them in sequential order .

(A) $(10)^2-\left(\frac{1}{3}\right)^2=100-\frac{1}{9}$

(B) $10\frac{1}{3} \times 9\frac{2}{3} = \left(10 + \frac{1}{3}\right)\left(10 - \frac{1}{3}\right)$

(C)

$$\left(10 + \frac{1}{3}\right)\left(10 - \frac{1}{3}\right) = (10)^2 - \left(\frac{1}{3}\right)^2 \left[\because (a+b)(a-b) = \left(a^2 - b^2\right)\right]$$

(D) $100 - \frac{1}{9} = 99 + 1 - \frac{1}{9} = 99\frac{8}{9}$

A. BCDA

B. BACD

C. ACBD

D. BCAD

Answer: D

Watch Video Solution

15. If $a^2 + 16a + k$ is a perfect square , then find the value of k .

A. 4

B. 16

C. 36

D. 64

Answer: D

Watch Video Solution

16. If $x + \frac{1}{x} = 2$, then $x^{2013} - \frac{1}{x^{2012}} =$ _____.

A. 2

B. 1

C. 0

D. -1

Answer: C

Watch Video Solution

17. $(2x - 6y)^2 - (6y + 8x)^2 =$ _____

A. $(5x)(3x + 6y)$

B. $-4(5x)(3x - 6y)$

C. $-12(5x)(x + 2y)$

D. $-6(5x)(x - 2y)$

Answer: C

Watch Video Solution

18. The HCF of $64x^6y^4$, $48x^4y^8$, and $54x^5y^4$ is _____.

A. $2x^4y^4$

B. $6x^2y^2$

C. $8x^4y^4$

D. $8x^2y$

Answer: A

Watch Video Solution

19. Factorise $12a^3b^3 - 3ab$.

A. $3\left(a^2b^2 - 1\right)$

B. $3ab(a - b)$

C. $3ab(2ab + 1)(2ab - 1)$

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

Answer: C

Watch Video Solution

20. $\left(a^5 - a^3\right) \div \left(a^2 + a\right) =$ _____

A. $a^2(a + 1)$

B. $a(a-1)$

C. $a^2(a+1)$

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

Answer: C

Watch Video Solution

21. If $3x - \frac{1}{2x} = 3$, then find the value of $\frac{36x^4+1}{4x^2}$.

A. 9

B. 12

C. 15

D. 6

Answer: B

Watch Video Solution

22. Find the square root of $3^{6n^2}(36)^{2a}(16)^b$.

A. $3^{3n^2}6(2a)2^{2b}$

B. $3^{6n}6^a4^b$

C. $3^{3n^2}6^a4^b$

D. $3^n6^a4^{2b}$

Answer: A

Watch Video Solution

23.

$$\frac{x^4}{4}+\frac{y^3}{3}-\frac{3z^2}{5}+\frac{x^4}{3}-\frac{3y^3}{5}+\frac{z^2}{4}-\frac{3x^4}{5}+\frac{y^3}{4}+\frac{z^2}{3}=\_\_\_\_\_.$$

A. $-\frac{1}{60}\left(x^4+y^3+z^2\right)$

B. $\frac{1}{60}\left(x^4-y^3+z^2\right)$

C. $\frac{x^4+y^3+z^2}{60}$

D. $\frac{x^4 + y^3 - z^2}{60}$

Answer: A

Watch Video Solution

24. Match Column A with Column B

Column A	Column B
12. $225x^2 - 625y^2 =$	(a) $25(x - 2)$ $(x - 2)$
13. $x^2 - x - y - y^2 =$	(b) $25(3x - 5y)$ $(3x + 5y)$
14. $x^2 - x - y^2 + y =$	(c) $(x + y)$ $(x - y - 1)$
15. $25x^2 - 100x + 100 =$	(d) $(x - y)$ $(x + y - 1)$
	(e) $(x + y)$ $(x + y - 1)$

Watch Video Solution

25. Factorise $25x^2 - 30xy + 9y^2$.

The following steps are involved in solving the above problem . Arrange them in sequential order .

(A) $(5x - 3y)^2 \qquad \left[\because a^2 - 2b + b^2 = (a - b)^2\right]$

(B) $(5x)^2 - 30xy + (3y)^2 = (5x)^2 - 2(5x)(3y) + (3y)^2$

(C) $(5x - 3y)(5x - 3y)$

A. ABC

B. BCA

C. ACB

D. BAC

Answer: D

Watch Video Solution

26. The following steps are involved in finding the value of $100\frac{3}{4} \times 99\frac{1}{4}$ by using appropriate identify . Arrange them in sequential order .

(A)

$$\left(100+\frac{3}{4}\right)\left(100-\frac{3}{4}\right)=(100)^2-\left(\frac{3}{4}\right)^2\left[\because (a+b)(a-b)=a^2-b^2\right]$$

(B) $10000-\frac{9}{16}=9999+1-\frac{9}{16}=9999\frac{7}{16}$

(C) $(100)^2-\left(\frac{3}{4}\right)^2=10000-\frac{9}{16}$

(D) $100\frac{3}{4}\times 99\frac{1}{4}=\left(100+\frac{3}{4}\right)\left(100-\frac{3}{4}\right)$

A. DABC

B. DACB

C. DBAC

D. DCAB

Answer: B

Watch Video Solution

27. If x^2+8x+k is a perfect square , then find the value of k .

A. 1

B. 4

C. 16

D. 64

Answer: C

Watch Video Solution

28. If $x + \frac{1}{x} = 2$ then $x^{2010} + x^{2009} =$ _____.

A. 4019

B. 2

C. 0

D. 1

Answer: B

Watch Video Solution

29. $(3x-4y)^2-(4x+3y)^2=$ _____.

A. $(7x-y)(7y-x)$

B. $(x-7y)(7x+y)$

C. $(x+7y)(7x-y)$

D. $(y-7x)(x+7y)$

Answer: D

Watch Video Solution

30. The HCF of $44x^5y^4$, $88x^6y^5$, and $66x^7y^6$_____.

A. $22x^4y^4$

B. $22x^5y^4$

C. $11x^7y^6$

D. $44x^5y^4$

Answer: B

Watch Video Solution

31. Factorise $x^4 + x^3 - x^2 - x$.

A. $\left(x^2 + 1\right)(x - 1)x$

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

C. $\left(x^2 + 1\right)(x - 1)^2$

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

Answer: B

Watch Video Solution

32. $\left(a^4 - a^2\right) \div \left(a^3 + a^2\right)$ = _____

A. $\left(a^2 + 1\right)$

B. $a - 1$

C. $a + 1$

D. $a^2 - 1$

Answer: B

Watch Video Solution

33. If $x - \frac{1}{2x} = 2$, then find the value of $\frac{4x^4 + 1}{4x^2}$

A. 10

B. 14

C. 5

D. 7

Answer: C

Watch Video Solution

34. Find the square root of $4^{6n^2}(25)^{\frac{a}{2}}9^{b^4}$.

A. $4^{3n^2}5^{\frac{a}{4}}3b^2$

B. $2^{6n^2}a^{\frac{5}{2}}3^{b^2}$

C. $2^{6n^2}5^{\frac{a}{2}}3^{b^4}$

D. $4^{3n}5^{a}3^{b^2}$

Answer: C

Watch Video Solution

35. $\frac{a^2}{2}+\frac{b^3}{3}-\frac{3c^3}{4}+\frac{a^2}{3}-\frac{3b^3}{4}+\frac{c^2}{2}-\frac{3a^2}{4}+\frac{b^3}{2}+\frac{c^3}{3}=$ _____

A. $\frac{a^2+b^3+c^3}{12}$

B. $\frac{a^2+b^3-c^3}{6}$

C. $\frac{6a^2+9b^2-12c^3}{24}$

D. $\frac{6a^2+9b^3-12c^3}{12}$

Answer: A

Watch Video Solution

36. Match Column A with Column B

Column A	Column B
27. $(a+b)^2 =$	(a) $(x+1)^2(x-1)$
28. $x^3 - x^2 - x + 1 =$	(b) $(a-b)^2 + 4ab$
29. $(a+b)(a^2 - ab + b^2) =$	(c) $(a^3 + b^3)$
30. $(x+1)(x^2 - 1) =$	(d) $(x-1)^2(x+1)$
	(e) $(a^3 - b^3)$

Watch Video Solution

Assessment Tests Test 2

1. Factorise $25x^2 - 30xy + 9y^2$.

The following steps are involved in solving the above problem . Arrange

them in sequential order .

(A) $(5x-3y)^2 \quad \left[\because a^2-2b+b^2=(a-b)^2\right]$

(B) $(5x)^2-30xy+(3y)^2=(5x)^2-2(5x)(3y)+(3y)^2$

(C) $(5x-3y)(5x-3y)$

A. ABC

B. BCA

C. ACB

D. BAC

Answer: D

Watch Video Solution

2. The following steps are involved in finding the value of $100\frac{3}{4}\times 99\frac{1}{4}$ by using appropriate identify . Arrange them in sequential order .

(A)

$$\left(100+\frac{3}{4}\right)\left(100-\frac{3}{4}\right)=(100)^2-\left(\frac{3}{4}\right)^2\left[\because (a+b)(a-b)=a^2-b^2\right]$$

(B) $10000 - \frac{9}{16} = 9999 + 1 - \frac{9}{16} = 9999\frac{7}{16}$

(C) $(100)^2 - \left(\frac{3}{4}\right)^2 = 10000 - \frac{9}{16}$

(D) $100\frac{3}{4} \times 99\frac{1}{4} = \left(100 + \frac{3}{4}\right)\left(100 - \frac{3}{4}\right)$

A. DABC

B. DACB

C. DBAC

D. DCAB

Answer: B

Watch Video Solution

3. If $x^2 + 8x + k$ is a perfect square , then find the value of k .

A. 1

B. 4

C. 16

D. 64

Answer: C

Watch Video Solution

4. If $x + \frac{1}{x} = 2$ then $x^{2010} + x^{2009} =$ _____.

A. 4019

B. 2

C. 0

D. 1

Answer: B

Watch Video Solution

5. $(3x - 4y)^2 - (4x + 3y)^2 =$ _____.

A. (7x - y) (7y-x)

B. (x- 7y) (7x + y)

C. (x + 7y) (7x - y)

D. (y-7x) (x + 7y)

Answer: D

Watch Video Solution

6. The HCF of $44x^5y^4$, $88x^6y^5$, and $66x^7y^6$_____.

A. $22x^4y^4$

B. $22x^5y^4$

C. $11x^7y^6$

D. $44x^5y^4$

Answer: B

Watch Video Solution

Watch Video Solution

7. Factorise $x^4 + x^3 - x^2 - x$.

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

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

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

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

Answer: B

Watch Video Solution

8. $(a^4 - a^2) + (a^3 + a^2) =$ _____.

A. $a^2 + 1$

B. $a - 1$

C. $a + 1$

D. $a^2 - 1$

Answer: B

Watch Video Solution

9. If $x - \frac{1}{2x} = 2$, then find the value of $\frac{4x^4 + 1}{4x^2}$

A. 10

B. 14

C. 5

D. 7

Answer: C

Watch Video Solution

10. Find the square root of $4^{6n^2}(25)^{\frac{a}{2}}9^{b^4}$.

A. $4^{3n^2}5^{\frac{a}{4}}3^{b^2}$

B. $2^{6n^2}5^{\frac{a}{2}}3^{b^2}$

C. $2^{6n^2}5^{\frac{a}{2}}3^{b^4}$

D. $4^{3n}5^{a}3^{b^2}$

Answer: C

Watch Video Solution

11. $\frac{a^2}{2}+\frac{b^3}{3}-\frac{3c^3}{4}+\frac{a^2}{3}-\frac{3b^3}{4}+\frac{c^2}{2}-\frac{3a^2}{4}+\frac{b^3}{2}+\frac{c^3}{3}=$ _____

A. $\frac{a^2+b^3+c^3}{12}$

B. $\frac{a^2+b^3-c^3}{6}$

C. $\frac{6a^2+9b^3-12c^3}{24}$

D. $\frac{6a^2+9b^3-12c^3}{12}$

Answer: A

Watch Video Solution

Watch Video Solution

12.

Column A	Column B
$(a+b)^2 =$	$(a)(x+1)^2(x-1)$
$x^3 - x^2 - x + 1 =$	$(b)(a-b) + 4ab$
$(a+b)\left(a^2 - ab + b^2\right) =$	$\left(a^3 + b^3\right)$
$(x+1)\left(x^2 - 1\right) =$	$(d)(x-1)^2(x+1)$
	$(e)\left(a^3 - b^3\right)$

Watch Video Solution

Example 2 1

1. Add 2x - 3y + z , 5y - x + 7z and 3x - y - 6z.

Watch Video Solution

2. Subtract 8p-5q + 7r from 5p- 9q + 3r.

Watch Video Solution

3. What should be subtracted from $x^3 - 7x^2 + 17x + 17$ so that the difference is a multiple of $x - 3$?

Watch Video Solution

4. Multiply $\left(5 - 3x - 4x^2\right)$ with 2x-3

Watch Video Solution

5. (a) Expand (x+4) (x+7)

(b) Expand (x+2) (x-5).

Watch Video Solution

6. Expand (x + 3) (x - 2) (x + 6).

Watch Video Solution

7. Expand $(3x + 4y)^2$.

Watch Video Solution

8. If x + $\frac{1}{x} = 3$, then find the value of $x^2 + \frac{1}{x^2}$.

Watch Video Solution

9. Expand $(5x - 9y)^2$

Watch Video Solution

10. If $x - \frac{1}{x} = 5$, then find the value of $x^2 + \frac{1}{x^2}$.

Watch Video Solution

11. If $Y + \frac{1}{Y} = -2$, then find the value of $Y^{50} - \frac{1}{Y^{50}}$.

Watch Video Solution

12. If $x^2 - y^2 = 12xy$, then find the value of $\frac{x^2}{y^2} + \frac{y^2}{x^2}$.

Watch Video Solution

13. Simplify $(3x + 4y)^2 + (3x - 4y)^2$.

Watch Video Solution

14. Simplify $(11x + 3y)^2 - (11x - 3y)^2$.

Watch Video Solution

15. Simplify: $(3x - 7y)(5x + 2y)$

Watch Video Solution

16. Factorise $49x^2 - 16y^2$.

Watch Video Solution

17. (a) Factorise : $x^2 - (z-5)x - 5z$

(b) Factorise : $x^2 + x - y + y^2 - 2xy$

Watch Video Solution

18. (a) Factorise : $9x^2 - 24xy + 16y^2$

(b) Factorise : $25x^2 + \frac{1}{25x^2} + 2$

Watch Video Solution

19. Divide $18x^4 - 27x^3 + 6x$ by 3x.

Watch Video Solution

20. Divide $10x^3 + 41x^2 - 4x - 15$ by $5x + 3$.

Watch Video Solution

21. (a) Find the HCF of $28x^4$ and $70x^6$.

(b) Find the HCF of $48x^2(x+3)^2(2x-1)^3(x+1)$ and $60x^3(x+3)(2x-1)^2(x+2)$.

Watch Video Solution

22. (a) Find the HCF of $28x^4$ and $70x^6$.

(b) Find the HCF of $48x^2(x+3)^2(2x-1)^3(x+1)$ and $60x^3(x+3)(2x-1)^2(x+2)$.

Watch Video Solution

23. Find the zero of the polynomial $4x + 7$.

Watch Video Solution

24. Find the perimeter of a rectangle whose length (l) = 15 cm and breadth (b) = 12 cm .

Watch Video Solution

25. Find the area of the triangle with base (b) = 12 cm and the corresponding height (h) = 8 cm .

Watch Video Solution

Test Your Concepts Very Short Answer Type Questions

1. $a \times b = b \times a$

Watch Video Solution

2. State whether the following statements are true or false.

$(x+2)(x-5) = x^2 - 3x + 10$

Watch Video Solution

3. $(a+2b)^2 - (a-2b)^2 = 8ab$

Watch Video Solution

4. $9.2 \times 8.8 = 72.96$

Watch Video Solution

5. An equation which is true for all real values of its variables is called an identify .

Watch Video Solution

6. HCF of $12x^2yz$ and $16xyz^2$ is 4xyz.

Watch Video Solution

7. $\sqrt{\frac{x^2}{y^2z^6}} = xy^{-1}z^{-3}$

Watch Video Solution

8. $\left(a^2-1\right)+(a-1)=(a-1)(a+2)$

Watch Video Solution

9. If a + b = 6 and $a^2-b^2=24$, then $a-b=4$.

Watch Video Solution

10. The constant term in the product of $(5x^2 - 7x + 4)(7x - 8)$ is 12.

Watch Video Solution

11. Fill in the blanks.

$5x^2(x - y)$ = _____

Watch Video Solution

12. $4x^2 - 4x + 1 = (\_\_\_\_\_)^2$

Watch Video Solution

13. Fill in the blanks.

$(x + a)(x + b)$= _____

Watch Video Solution

14. Fill in the blanks.

$x^2 - y^2$ = _____

Watch Video Solution

15. Fill in the blanks.

$(a + 3b)^2$ _____

Watch Video Solution

16. If $\left(x + \frac{1}{x}\right) = \sqrt{7}$, then $x^2 + \frac{1}{x^2}$ = _____

A. 5

B. 4

C. 0

D. 3

Answer: A

Watch Video Solution

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

A. $(a-1)^2$

B. $(a-1)^3$

C. a^2-1

D. 1

Answer: B

Watch Video Solution

18. $(a+b)(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b})$ = _____

A. $(a+b)^2$

B. $a^2 - b^2$

C. 1

D. $(a - b)^2$

Answer: B

Watch Video Solution

19. If a=3 and b=-2, then $a^2 + b^2 + 2ab$ =_____

A. 9

B. 4

C. 2

D. 1

Answer: D

Watch Video Solution

20. $(x+a)(x-b)$ = _____

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

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

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

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

Answer: D

Watch Video Solution

21. The degree of $4x^2$ is

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

22. The degree of $-3x^3 + 5x^2 + 4$ is _____.

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

23. The degree of xyz is _____.

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

24. The degree of x + y + z is _____.

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

25. The zero of x + 2 is _____

A. 0

B. 2

C. -2

D. 1

Answer: C

Watch Video Solution

26. The zero of x - 3 is _____

A. 0

B. 3

C. -3

D. 4

Answer: B

Watch Video Solution

27. The zero of 3x + 2 is _____.

A. 0

B. $\frac{2}{3}$

C. $-\frac{2}{3}$

D. $-\frac{1}{3}$

Answer: C

Watch Video Solution

28. The zero of $12x - 3$ is_____

A. 3

B. 4

C. $\frac{1}{4}$

D. $\frac{1}{3}$

Answer: C

Watch Video Solution

29. The expanded form of (x + y) (x - y) is a _____

A. monomial

B. binomial

C. trinomial

D. None of these

Answer: B

Watch Video Solution

30. Find the degree of $\left(x^2 - x\right)^2$.

A. 3

B. 4

C. 5

D. 6

Answer: B

Watch Video Solution

Test Your Concepts Short Answer Type Questions

1. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

A - B

Watch Video Solution

2. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

A - B

Watch Video Solution

3. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

2A + 3B

Watch Video Solution

4. If A = $3x^2 + 2x - 7$ and B = $7x^3 - 3x + 4$, then find :

2A - 3B

Watch Video Solution

5. Find the products for the following:

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

Watch Video Solution

6. Find the products for the following :

(x-5) (x + 6)

Watch Video Solution

7. Find the product of $5x^2 - 7x + 6$ and 3x and verify it when x = -2 .

Watch Video Solution

8. Find the product of $(8x - 3)(2x + 5)$

Watch Video Solution

9. By using an appropriate identity , expand the following :

$(3x + 4y)^2$

Watch Video Solution

10. By using an appropriate identity , expand the following :

$$\left(5x + \frac{1}{5x}\right)^2$$

Watch Video Solution

11. By using an appropriate identity , expand the following :

$$(x - 2y)^2$$

Watch Video Solution

12. By using an appropriate identity, expand the following:

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

Watch Video Solution

13. By using an appropriate identity , expand the following :

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

Watch Video Solution

14. By using an appropriate identity , expand the following :

$(x+y)(x-y)\left(x^2+y^2\right)$

Watch Video Solution

15. By using an appropriate identity , find the following :

$(102)^2$

Watch Video Solution

16. By using an appropriate identity , find the following :

$(54)^2$

Watch Video Solution

17. By using an appropriate identity , find the following :

$\left(10\frac{1}{4}\right)^2$

Watch Video Solution

18. By using an appropriate identity , find the following :

$(95)^2$

Watch Video Solution

19. By using an appropriate identity , find the following :

$(28)^2$

Watch Video Solution

20. By using an appropriate identity , find the following :

$\left(9\frac{1}{2}\right)^2$

Watch Video Solution

21. By using an appropriate identity , find the following :

89×111

Watch Video Solution

22. By using an appropriate identity, find the following:

37×43

Watch Video Solution

23. Find the HCF of the following :

$26x^2y^2z^2$ and $39x^3y^2z$

Watch Video Solution

24. Find the HCF of the following :

50 ab and 60 bc

Watch Video Solution

25. Factorise the following :

$x^2(x+y)+y^2(x+y)$

Watch Video Solution

26. Factorise the following :

$(3x+2y)(a-b)+(3x-2y)(a-b)$

A. $-6x(a-b)$

B. $6x(a+b)$

C. $6x(a-b)$

D. none of the above

Answer: C

Watch Video Solution

27. Find the value of 994×1006 by using an appropriate identity .

Watch Video Solution

28. Check whether the following are perfect squares or not :

(a) $64x^2 + 81y^2 - 144xy$

(b) $4x^2 + 8y^2 + 16xy$

Watch Video Solution

29. Check whether the following are perfect squares or not :

(a) $64x^2 + 81y^2 - 144xy$

(b) $4x^2 + 8y^2 + 16xy$

Watch Video Solution

30. Divide $x^2 + 6x + 8$ by x + 2 and find the quotient .

Watch Video Solution

31. Factorise : $a^3 - ab^2 + a^2b - b^3$

Watch Video Solution

32. Find the HCF of $24abc^3$, $36ab^3c$, and $48a^3bc$.

Watch Video Solution

33. Factorise : $x^4 + y^4 - 2x^2y^2$

Watch Video Solution

34. If $y + \frac{1}{2y} = 4$, then find $y^2 + \frac{1}{4y^2}$

Watch Video Solution

35. Simplify : $\sqrt{\frac{169p^3q^3}{225pq^5}}$

Watch Video Solution

36. Simplify: $\frac{9x^2 - 4y^2}{6x + 4y}$

Watch Video Solution

Test Your Concepts Essay Type Quesions

1. Find the product of (3a + 4b) and (3a - 4b) and verify it when a = -1 and b = 1 .

Watch Video Solution

2. If $\frac{3x}{5} + \frac{5}{2x} = 4$, then find $\frac{9x^2}{25} + \frac{25}{4x^2}$

Watch Video Solution

3. If $5x - \frac{1}{2x} = 3$, then find $25x^2 + \frac{1}{4x^2}$.

Watch Video Solution

4. If $a + \frac{1}{a} = 6$, then find $a^4 + \frac{1}{a^4}$.

Watch Video Solution

5. Divide $\left(a^4 - b^4\right)$ by a - b and find the quotient and remainder .

Watch Video Solution

6. Divide $4x^3 + 8x^2 - 9x + 6$ by 2x + 3 and verify the division rule .

Watch Video Solution

7. Divide $x^3 + y^3$ by x + y and verify the division rule .

Watch Video Solution

8. Factorise the following :

$4x^2 + 8y^2 + 12xy$

Watch Video Solution

9. Factorise the following :

$(3x + 2y)^2 - (5x - 3y)^2$

Watch Video Solution

10. Factorise the following :

$a^4 - a - a^2 - 1$

Watch Video Solution

11. If $x - \frac{1}{x} = 2$, then find $x^4 + \frac{1}{x^4}$.

Watch Video Solution

12. If $36a^2 + \frac{1}{4a^2} = 31$, then find the value (s) of $6a - \frac{1}{2a}$.

Watch Video Solution

13. If m + n = 14 and mn = 48 , then find the value (s) of m - n .

Watch Video Solution

Concept Application Level 2

1. If $a^2 - b^2 = 36$ and $a + b = 4$ then $(a - b)^2 =$ _____ .

A. 36

B. 9

C. 81

D. 144

Answer: C

Watch Video Solution

2. If $X = 3x^3 + 3x^2 + 3x + 3$ and Y = $3x^2 - 3x + 3$, then X - Y = _____.

A. $3x^3$

B. $3x^3 + 6x^2 + 6x + 6$

C. $6x^2 + 6x + 6$

D. $3x^3 + 6x$

Answer: D

Watch Video Solution

3. The sum of the values of the expression $2x^2 - 2x + 2$ when x = -1 and x = 1 is _____.

A. 6

B. 8

C. 4

D. 2

Answer: B

Watch Video Solution

4. If X = $2x^2$, $Y = 4x^6 - 6x^4$, then find the value of $\frac{Y}{X}$ when x = 1 .

A. -4

B. 2

C. -1

D. 3

Answer: C

Watch Video Solution

5. If $x + \frac{1}{x} = 6$, then find $x^2 + \frac{1}{x^2}$.

A. 34

B. 36

C. 32

D. 38

Answer: A

Watch Video Solution

6. If x = -2 and $x^2 + y^2 + 3xy = -5$, then find y.

A. -2

B. 3

C. -4

D. 9

Answer: B

Watch Video Solution

7. Number of terms in the expresion (a + b) (c + d) is _____.

A. 1

B. 2

C. 3

D. 4

Answer: D

Watch Video Solution

8. $46 \times 46 + 54 \times 54 + 2 \times 46 \times 54 =$ _____

A. 9996

B. 10004

C. 9800

D. 10000

Answer: B

Watch Video Solution

9. $\frac{79^2 - 9^2}{89^2 - 9^2} = \_\_\_\_\_$

A. $\frac{5}{8}$

B. $\frac{13}{15}$

C. $\frac{6}{9}$

D. $\frac{11}{14}$

Answer: D

Watch Video Solution

10. $\sqrt{\frac{81(x+y)^2}{144(x-y)^2}} =$ _____

A. $\frac{9(x+y)^{\sqrt{2}}}{12(x-y)^{\sqrt{2}}}$

B. $\frac{9(x+y)^2}{12(x-y)^2}$

C. $\frac{3(x+y)}{4(x-y)}$

D. $9(x+y)\,/\,12(x-y)$

Answer: C

Watch Video Solution

11. If A = (3x + 6) and B = $2x^2 + 3x + 4$, then the degree of AB is _____

A. 4

B. 3

C. 2

D. 1

Answer: B

Watch Video Solution

12. Find the HCF of $18p^2qr$, $24pq^2r$ and $27pqr^2$.

A. $216pqr$

B. 3pqr

C. $216(pqr)^2$

D. $3(pqr)^2$

Answer: B

Watch Video Solution

13. Find the degree of $\left(x^3 - x^2\right)^2$.

A. 12

B. 4

C. 6

D. 9

Answer: C

Watch Video Solution

14. The value of 998^2 is _____

A. 996064

B. 996004

C. 998004

D. 998064

Answer: B

Watch Video Solution

Watch Video Solution

15. $x^4 + y^4 + 2x^2y^2 =$ _____

A. $(x + y)^4$

B. $\left(x^2 - y^2\right.$

C. $\left(x^2 + y^2\right)\left(x^2 - y^2\right)$

D. $\left(x^2 + y^2\right)^2$

Answer: D

Watch Video Solution

16. If $3x + \frac{1}{x} = 6$, then find $9x^2 + \frac{1}{x^2}$.

A. 24

B. 27

C. 30

D. 33

Answer: C

Watch Video Solution

17. Which of the following is/are perfect squares ?

A. $16a^2 + 36b^2 - 48ab$

B. $9x^2 + 18xy + 9y^2$

C. Both (a) and (b)

D. Neither (a) nor (b)

Answer: C

Watch Video Solution

18. For what value of K is $16x^2 + 24xy + K$ a perfect square

A. $9y^2$

B. $18y^2$

C. $3y^2$

D. $16y^2$

Answer: A

Watch Video Solution

19. If $2y + \frac{1}{2y} = l$ and $2y - \frac{1}{2y} = m$, then $l^2 - m^2 =$ _____.

A. 2

B. 4

C. 6

D. 0

Answer: A::B

Watch Video Solution

Watch Video Solution

Concept Application Level 3

1. If $x^2 - y^2 = 28$ and x + y = 7 then $(x - y)^2 =$ _____ .

A. 8

B. 4

C. 16

D. 12

Answer: C

Watch Video Solution

2. Factorise $a^4 + a^3 + a^2 + a$.

A. $(a + 1)\left(a^2 + 1\right)(a - 1)$

B. $a(a+1)\left(a^2+1\right)$

C. $\left(a^2+1\right)\left(a^2+1\right)$

D. $a(a+1)^2(a+1)$

Answer: B

Watch Video Solution

3. Factorise $(2a+3b)^2-(3a-2b)^2$.

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

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

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

D. $(5a+b)(5b+a)$

Answer: C

Watch Video Solution

4. What is the remainder when $\left(2x^2 + 3x + 7\right)$ is divided by (x + 2) ?

A. 3

B. 9

C. 7

D. 5

Answer: B

Watch Video Solution

5. What is the quotient when $\left(x^3 + 8\right)$ is divided by $\left(x^2 - 2x + 4\right)$?

A. $x - 2$

B. $x + 2$

C. $x + 1$

D. $x - 1$

Answer: B

Watch Video Solution

6. Which of the following is a perfect square ?

A. $9x^2 + 24xy + 4y^2$

B. $4x^2 + 12xy + 3y^2$

C. $25x^2 - 10xy + 4y^2$

D. $25x^2 - 30xy + 9y^2$

Answer: D

Watch Video Solution

7. If x + y = 7 and xy = 2 , then $x^2 - y^2 =$ _____$(x > y)$

Watch Video Solution

8. 32. If $x + \frac{1}{x} = 2$ then $x^{100} - \frac{1}{x^{100}}$ is

Watch Video Solution

9. If $x + \frac{1}{x} = 2$, then $x^{100} - \frac{1}{x^{100}} =$ _____.

A. 0

B. 1

C. 2

D. 2100

Answer: A

Watch Video Solution

10. For what value of p is 9 $x^2 + 18xy + p$ a perfect square ?

A. $9y^2$

B. $3y$

C. $6y^2$

D. $4y^2$

Answer: A

Watch Video Solution

11. If $2y + \frac{1}{2y} = 3$, then $16y^4 + \frac{1}{16y^4} =$ _____.

A. 81

B. 79

C. 49

D. 47

Answer: D

Watch Video Solution

12. If $496 \times 492 = x^2 - 4(x > 0)$, then x = _____.

A. 495

B. 494

C. 493

D. 496

Answer: B

Watch Video Solution

13. Factorise $x^4 + x^2 + 1$.

A. $\left(x^2 - x - 1\right)\left(x^2 + x - 1\right)$

B. $\left(x^2 + x + 1\right)\left(x^2 - x + 1\right)$

C. $\left(x^2 - x + 1\right)\left(x^2 + x\right)$

D. $\left(x^2 + x - 1\right)\left(x^2 - 1\right)$

Answer: B

Watch Video Solution

14. If $x + \frac{1}{x} = a$ and $x - \frac{1}{x} = b$, then $a^2 - b^2 =$ _____.

A. 4

B. 3

C. 2

D. 1

Answer: A

Watch Video Solution

15. Factorise $y^2 + 2xy + 2xz - z^2$.

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

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

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

D. $(y+z)(y-z+2x)$

Answer: D

Watch Video Solution

16. If A = $(x-a)(x-b)(x-c).....(x-z)$, then the number of terms in the expansion of (a + A) (b + A) (c + A) .... (z + A) is _____.

A. 1

B. 27

C. 56

D. 54

Answer: A

Watch Video Solution

17. $(4x^4 + 19x^2 + 25) \div (2x^2 - x + 5) =$ _____ .

A. $2x^2 - 9x + 5$

B. $2x^2 + 9x + 5$

C. $2x^2 + x + 5$

D. $2x^2 - x + 5$

Answer: C

Watch Video Solution

18. If P = $8x^4 + 6x^3 - 15x^2 + 27x - 20$ and Q = $2x^2 + 3x - 4$, then find the remainder when P is divided by Q .

A. 0

B. -1

C. -8

D. -4

Answer: A

Watch Video Solution

19. Factorize: $x^3 + xy^2 - x^2 - y^2$ =_____

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

B. $\left(x^2 + y^2\right)(x - 1)$

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

D. $(x + y)(x - y)^2$

Answer: B

Watch Video Solution

20. If $y - \frac{1}{y} = 3$, then find $y^4 + \frac{1}{y^4}$.

A. 119

B. 117

C. 123

D. 125

Answer: A

Watch Video Solution

21. If $64x^2 + \frac{1}{16x^2} = 20$, then $8x - \frac{1}{4x}$ can be _____

A. 2

B. 8

C. 1

D. 4

Answer: D

Watch Video Solution

22. If p + q = 15 and pq = 54 , then p - q can be _____ .

A. 3

B. 5

C. 4

D. 6

Answer: A

Watch Video Solution

23. Divide $2x^2 + 3x + 4$ by $x + 1$ and find the quotient.

A. $2x + 1$

B. $x - 4$

C. $2x + 4$

D. $2x - 4$

Answer: A

Watch Video Solution

24. What should be subtracted from $x^3 + 2x^2 - 3x + 10$, so that the difference is a multiple of $x - 2$?

Watch Video Solution

25. If C = (7x + 9) and D = $\left(4x^2 + 8x + 5\right)$, then the degree of the product CD is _____.

A. 3

B. 4

C. 2

D. 1

Answer: A

Watch Video Solution