

FOUNDATION⁺

Class: VI, MATHEMATICS

3. ADDITION AND SUBTRACTION OF ALGEBRAIC EXPRESSIONS

TEACHING TASK (JEE MAINS)

01. $3x + 5y + 7x - 2y = 10x + 3y$ Ans: A

02. $2x^2 + 3x - 5 - x^2 + 2x - 4$
 $= x^2 + 5x - 9$ Ans: B

03. $p + q = x + \frac{1}{x} + 2x - \frac{1}{x} = 3x$ Ans: C

04. $4a - 7b + 2c + 3a + 5b - c$
 $= 7a - 2b + c$ Ans: A

05. $5x^2 - 3x + 7 - 2x^2 - 4x + 5$
 $= 3x^2 - 7x + 12$ Ans: A

06. $x + \frac{1}{x} - x + \frac{1}{x} = \frac{2}{x}$ Ans: B

07. $7p + 2q + 3p - 5q - 2p - q$
 $= 8p - 4q$ Ans: A

08. $x^2 + xy + y^2 - xy - y^2 = x^2$ Ans: A

09. $3A - 2B = 3(2x + 3) - 2(5x - 7)$
 $= 6x + 9 - 10x + 14$
 $= -4x + 23$ Ans: D

$$10. \quad 2x^3 + x^2 - x + 3x^3 - x^2 + 4x \\ = 5x^3 + 3x$$

Ans: A

JEE ADVANCED

$$11. \quad \frac{2}{x} + \frac{3}{x} - \frac{1}{x} = \frac{4}{x} \quad \text{or} \quad \frac{2+3-1}{x} \quad \text{or} \quad \frac{2}{x} + \frac{2}{x}$$

Ans: A, B, C

$$12. \quad \frac{3}{x} - \frac{2}{y} + \frac{4}{x} = \frac{3+4}{x} - \frac{2}{y} = \frac{7}{x} - \frac{2}{y}$$

Ans: A, B, C

$$13. \quad \text{Statement I: } \frac{3+5-2}{x} = \frac{6}{x} \quad (\text{True})$$

Statement II: Conceptual (True) Ans: A

$$14. \quad \text{Statement I: } \frac{2x-3x+5x}{y} = \frac{4x}{y} \quad (\text{True})$$

Statement II: Conceptual (True) Ans: A

$$15. \quad \text{Assertion: } 5x^2 + 3x - 2 + 4x^2 - 7x + 5 \\ = 9x^2 - 4x + 3 \quad (\text{True})$$

Reason: Conceptual (True) Ans: A

$$16. \quad \text{Assertion: } \frac{3+2-5}{x} = 0 \quad (\text{True})$$

Reason: Conceptual (True) Ans: A

$$17. \quad A+B = 3x^2 - 4x + 7 + 5x^2 + 6x - 2 \\ = 8x^2 + 2x + 5$$

Ans: A

$$18. \quad A-B = 3x^2 - 4x + 7 - 5x^2 - 6x + 2 \\ = -2x^2 - 10x + 9$$

Ans: A



$$19. \quad P+Q = \frac{3x}{x^2+1} + \frac{2x}{x^2+1} = \frac{5x}{x^2+1} \quad \text{Ans: A}$$

$$20. \quad (P+Q) - R = \left(\frac{3x}{x^2+1} + \frac{2x}{x^2+1} \right) - \frac{5}{x^2+1}$$

$$= \frac{5x-5}{x^2+1} \quad \text{Ans: A}$$

$$21. \quad (A+B) - C = (3x - 4x) - 2x$$

$$= -x - 2x = -3x$$

$$\therefore \text{Coefficient} = -3 \quad \text{Ans: -3}$$

$$22. \quad \frac{2x+3+4x-5-6x+8}{x^2+1}$$

$$\text{Numerator} = 6 \quad \text{Ans: 6}$$

$$23. \quad a) \quad 8x^2 + 2x + 2 \quad (P)$$

$$b) \quad 2x^2 - 3x + 4 - x^2 + 6x + 2$$

$$= x^2 + 3x + 6 \quad (Q)$$

$$c) \quad 7x^2 - 8x + 1 - 3x^2 - 2x + 5$$

$$= 4x^2 - 10x + 6 \quad (R)$$

$$d) \quad 3x^2 - 2x + 1 \quad (S) \quad \text{Ans: P, Q, R, S}$$

$$24. \quad a) \quad \frac{5x-3}{x^2+1} \quad (P)$$

$$b) \quad \frac{4x-6-3x-2}{x^2+4} = \frac{x-8}{x^2+4} \quad (Q)$$

$$c) \quad \frac{3x+1}{x^2-1} \quad (R) \quad d) \quad \frac{5x-1-x-4}{x^2+1} = \frac{4x-5}{x^2+1} \quad (S)$$

$$\text{Ans: P, Q, R, S}$$

LEARNERS TASK (CUCU'S)

01. Conceptual Ans: D

02.
$$p - q = ax + by - cx - dy$$

$$= (a - c)x + (b - d)y$$
 Ans: A

03. Conceptual Ans: B

04. Conceptual Ans: D

05. $by - cz$ Ans: B

06. Conceptual Ans: B

07. Conceptual

$$p + q = m^2 + n + mn + n^2$$
 Ans: A

08. Conceptual Ans: C

09. Conceptual Ans: A

10.
$$p - q = x + y + z - x^2 - y^2 - z^2$$
 Ans: B

JEE MAINS LEVEL

01.
$$x + \frac{1}{x} + 2x - \frac{3}{x}$$

$$= 3x - \frac{2}{x}$$
 Ans: A

02.
$$5a - 3b + 2c - 2a - b + 3c$$

$$= 3a - 4b + 5c$$
 Ans: A

03.
$$x^2 + 3xy + y^2 - x^2 + xy - y^2$$

$$= 4xy$$
 Ans: D

04.
$$p - q = x + \frac{2}{x} - 3x + \frac{1}{x} = -2x + \frac{3}{x}$$
 Ans: A

$$05 \quad 7x + 2y - z + 3x - 5y + 4z$$

$$= 10x - 3y + 3z$$

Ans: A

$$06 \quad 2x^2 + 3x - 1 - x^2 - 4x - 2 + x^2 - x + 5$$

$$= 2x^2 - 2x + 2$$

Ans: D

$$07 \quad A^2 - B^2 = \left(x + \frac{1}{x}\right)^2 - \left(x - \frac{1}{x}\right)^2$$

$$= 4 \cdot x \cdot \frac{1}{x} = 4$$

Ans: B, D

$$08 \quad 5x - 3 + 2x^2 - x + 7 = 2x^2 + 4x + 4 \quad \text{Ans: A}$$

$$09 \quad 3x + 1 - 2x + 5 + x + 3 = 2x + 9 \quad \text{Ans: A}$$

$$10. \quad 2\left(x + \frac{1}{x}\right) - 3 = 2x + \frac{2}{x} - 3 \quad \text{Ans: A}$$

JEE ADVANCED

$$11. \quad \frac{x + 2x - \frac{x}{2}}{y} = \frac{5x}{2y} = \frac{(1 + 2 - \frac{1}{2})x}{2}$$

Ans: A, B, C

$$12 \quad \frac{2+4}{x} - \frac{3+5}{y} = \frac{6}{x} - \frac{8}{y}$$

$$(8) \quad \frac{2}{x} + \frac{4}{x} - \frac{3}{y} - \frac{5}{y}$$

Ans: A, B, D

$$13 \quad \text{Statement I: } \frac{1}{x} - \frac{1}{x} + \frac{2}{y} = \frac{2}{y} \quad (\text{True})$$

$$\text{Statement II: Conceptual (True)}$$

Ans: A

$$14 \quad \text{Statement I: } \frac{3+5}{x} - \frac{2+3}{y} = \frac{8}{x} - \frac{5}{y} \quad (\text{True})$$

$$\text{Statement II: Conceptual (True)}$$

Ans: A

$$15 \quad \text{Assertion: } 3x^2 - 2x + 4 - x^2 - 5x + 3 = 2x^2 - 7x + 7$$

$$\text{Reason: Conceptual (True)}$$

(True)

Ans: A



16 Assertion: Mathematically (True)

Ans. A

Reason: Conceptual (True)

$$17 \quad M+N = \frac{x^2+1}{x^3-1} + \frac{x+1}{x^3-1} = \frac{x^2+1+x+1}{x^3-1} \\ = \frac{x^2+x+2}{x^3-1}$$

Ans: A

$$18 \quad M-N = \frac{x^2+1-x-1}{x^3-1} = \frac{x^2-x}{x^3-1} \quad \text{Ans. A}$$

$$19. \quad A+B = \frac{2x}{x+1} + \frac{x+3}{x-1} \\ = \frac{2x(x-1) + (x+3)(x+1)}{(x+1)(x-1)} \\ = \frac{2x^2 - 2x + x^2 + x + 3x + 3}{x^2-1} \\ = \frac{3x^2 + 2x + 3}{x^2-1}$$

Ans. D

$$20 \quad A-B = \frac{2x}{x+1} - \frac{x+3}{x-1} \\ = \frac{2x(x-1) - (x+3)(x+1)}{(x+1)(x-1)}$$

$$\text{Numerator} = (2x^2 - 2x) - (x^2 + x + 3x + 3) \\ = 2x^2 - 2x - x^2 - x - 3x - 3 \\ = x^2 - 6x - 3$$

Ans: D

$$21 \quad 5x^2 - 7x + 4 - 3x^2 + 2x - 8 - x^2 - x + 6 \\ = x^2 - 6x + 2$$

$$\text{Sum of Coefficients} = 1 - 6 + 2 = -3 \quad \text{Ans: -3}$$

$$22 \text{ Numerator} = x^2 + 2x + 3 - 2x^2 + x - 4$$

$$= -x^2 + 3x - 1$$

$$\text{Sum of the Coefficients} = -1 + 3 - 1 = 1$$

Ans: 1

23 a) $x^2 - 5x + 3 - 2x^2 + x - 4 - x^2 + 2x - 2$

$$= x^2 - 2x - 3 \text{ (---)}$$

b) $3x^2 + 2x - 1 - x^2 + 4x - 5 - 2x^2 - 3x + 6$

$$= 3x(0)$$

c) $x^2 - 2x + 3 + 4x^2 - x - 5 - 3x^2 + 6x - 2$

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

d) $2x^2 + 5x - 3 - x^2 + 2x + 4 + 3x^2 - 7x + 1$

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

Ans: -, 0, 5

24 a) $\frac{x^2 + 3x - 2 + 2x^2 - x + 1}{x^3 - 1} = \frac{3x^2 + 2x - 1}{x^3 - 1} (P)$

b) $\frac{3x^2 - 4x + 5 - x^2 + 3x - 2}{x^3 - 8} = \frac{2x^2 - x + 3}{x^3 - 8} (Q)$

c) $\frac{2x^2 + x - 4 - x^2 + 2x - 3}{x^3 + 1} = \frac{x^2 + 3x - 7}{x^3 + 1} (R)$

d) $\frac{x^2 - 5x + 2 - 2x^2 + 3x - 1}{x^3 - 1} = \frac{-x^2 - 2x + 1}{x^3 - 1}$

(S)

Ans: P, Q, R, S

⇒ THE END ⇐