

5-9-2024

Unit 4

Ex 4.6

Q1

i) $x^3 + 7x - 8$

1 Ans.

~~$x^3 + 7x - 8$~~

ii) $\frac{x^2}{x^2 + y^2}$

$\frac{x^2}{x^2 + y^2}$ Ans.

iii) $\frac{m}{m^2 + n^2}$ is $\frac{m+n}{m^2 + n^2}$

n Ans.
 $m^2 + n^2$

iv) 1 Ans.

R.w

$8 \times \frac{1}{8} = 1$

Q4 $\frac{a-b}{a^2+ab} \times \frac{a^2-b^2}{a^2-2ab+b^2} \times \frac{a}{a^2+b^2}$

$\frac{a-b}{a(a+b)} \times \frac{(a^2)^2 - (b^2)^2}{(a-b)^2} \times \frac{a}{(a^2+b^2)}$

$\frac{a-b}{a(a+b)} \times \frac{(a^2+b^2)(a^2-b^2)}{(a-b)^2} \times \frac{a}{a^2+b^2}$

Q2 $\frac{14x^2-7x}{12x^3+24x^2} \times \frac{x^2+2x}{2x-1}$

$= \frac{7x(2x-1)}{12x^2(x+2)} \times \frac{x(x+2)}{(2x-1)}$

$= \frac{7x \cdot x}{12x^2} = \frac{7x \cdot x}{12x \cdot x} = \frac{7}{12}$ Ans.

Q3 $\frac{a^2b^2+3ab}{4a^2-1} \times \frac{2a+1}{ab+3}$

$\frac{ab(ab+3)}{(2a)^2 - (1)^2} \times \frac{2a+1}{(ab+3)}$

$\frac{ab(ab+3)}{(2a+1)(2a-1)} \times \frac{2a+1}{(ab+3)}$

ab Ans.

$2a-1$

$$\frac{a-b}{a(a+b)} \times \frac{(a^2+b^2)(a^2-b^2)}{(a-b)(a-b)} \times \frac{a}{a^2+b^2}$$

$$\frac{1}{(a+b)} \times \frac{(a^2-b^2)}{(a-b)}$$

$$\frac{1}{(a+b)} \times \frac{(a^2-b^2)}{(a-b)}$$

$$\frac{1}{(a+b)} \times \frac{(a+b)(a-b)}{(a-b)}$$

= 1 Ans.

$$Q6 \frac{8a^3-1}{4a^3+2a^2} \div \frac{6a^2-13a+5}{15a-25} \times \frac{2a^4+a^3}{15a^2}$$

$$\frac{(2a)^3-(1)^3}{2a^2(2a+1)} \div \frac{6a^2-10a+5}{15a-25} \times \frac{a^3(2a+1)}{15a^2}$$

$$\frac{(2a-1)[(2a)^2+(2a)(1)+(1)^2]}{2a^2(2a+1)} \times \frac{5(3a-5)}{2a(3a-5)-1(3a+5)} \times \frac{a^3(2a+1)}{15a^2}$$

$$\frac{(2a-1)(2a^2+2a+1)}{2a^2(2a+1)} \times \frac{5(3a-5)}{(3a-5)(2a-1)} \times \frac{a^3(2a+1)}{15a^2}$$

$$\frac{6x^2y^2}{(x)^2-(y)^2} \div \frac{3xy}{x+y}$$

$$\frac{(2a^2+2a+1)}{2a^2} \times \frac{5}{1} \times \frac{a^3}{15a^2}$$

$$\frac{6x^2y^2}{(x+y)(x-y)} \times \frac{(x+y)}{(3xy)}$$

$$\frac{(4a^2+2a+1)}{6a^4} \times a^3$$

$$\frac{(4a^2+2a+1)}{6a} \text{ Ans.}$$

$$\frac{2x^2y^2}{(x-y)} \times \frac{1}{xy}$$

$$\frac{2x^2y^2}{(x-y)} \times \frac{1}{xy}$$

$$\frac{2xy}{(x-y)} \text{ Ans.}$$

Q7 $\frac{x^2-8x-9}{x^2-17x+72} \times \frac{x^2-25}{x^2-1} \div \frac{x^2+4x-5}{x^2-9x+8}$

$\frac{x^2-9x+x-9}{x^2-8x-9x-72} \times \frac{(x^2-5)^2}{(x^2-1)^2} \div \frac{x^2+5x-1x-5}{x^2-8x-x+8}$

$\frac{x(x-9)+1(x-9)}{x(x-8)-9(x-8)} \times \frac{(x-5)(x+5)}{(x-1)(x+1)} \div \frac{x(x+5)-1(x+5)}{x(x-8)-1(x-8)}$

$\frac{(x-9)(x+1)}{(x-8)(x-9)} \times \frac{(x-5)(x+5)}{(x-1)(x+1)} \div \frac{(x+5)(x-1)}{(x-8)(x-1)}$

$\frac{(x-9)(x+1)}{(x-8)(x-9)} \times \frac{(x-5)(x+5)}{(x-1)(x+1)} \times \frac{(x-8)(x-1)}{(x+5)(x-1)}$

$\frac{(x-5)}{(x-1)}$ Ans.

Q8 $\frac{1}{2x-3y} - \frac{x+y}{4x^2-9y^2}$

$\frac{1}{2x-3y} - \frac{x+y}{(2x)^2-(3y)^2}$

$\frac{1}{2x-3y} - \frac{x+y}{(2x-3y)(2x+3y)}$

4

$\frac{2x+3y-x-y}{(2x-3y)(2x+3y)} = \frac{x+2y}{4x^2-9y^2}$ Ans.

$$Q9 \quad \frac{1}{x(x-y)} + \frac{1}{y(x+y)}$$

$$= \frac{y(x+y) + x(x-y)}{xy(x-y)(x+y)} = \frac{\cancel{xy} + y^2 + x^2 - \cancel{xy}}{xy(x^2 - y^2)}$$

$$= \frac{y^2 + x^2}{xy(x^2 - y^2)} \text{ Ans.}$$

$$Q10 \quad \frac{5x+5}{3(2x-1)} + \frac{6-2x}{2(1-2x)}$$

$$\frac{5x+5}{3(2x-1)} + \frac{(6-2x)}{2(1-2x)}$$

$$\frac{5(x+1)}{3(2x-1)} + \frac{2(3-x)}{2(1-2x)}$$

~~8~~

$$\frac{10x+10-18+6x}{3 \times 2(2x-1)}$$

$$= \frac{16x-8}{6(2x-1)} = \frac{8(2x-1)}{6(2x-1)}$$

$$= \frac{\cancel{8}^4}{\cancel{6}_2} = \frac{4}{3} \text{ Ans.}$$

Q11 $x^4 + \frac{1}{x^4} + 4x^2 = \frac{4}{x^2} + 2, x \neq 0$

Q11 $\frac{2a}{2a-3} - \frac{5}{6a+9} - \frac{4(3a+2)}{3(4a^2-9)}$

$\frac{2a}{2a-3} - \frac{5}{3(2a+3)} - \frac{12a+8}{3[(4a)^2 - (3)^2]}$

$\frac{2a}{2a-3} - \frac{5}{3(2a+3)} - \frac{12a+8}{3[(4a-3)(4a+3)]}$

$\frac{3(4a)(2a+3) - 5(2a-3)}{3(2a-3)(2a+3)}$

$\frac{3(2a)(2a+3) - 5(2a-3) - 12a+8}{3(2a-3)(2a+3)}$

$\frac{12a^2 + 18a - 10a + 15 - 12a + 8}{3(4a^2 - 9)}$

$= \frac{12a^2 - 4a - 7}{3(4a^2 - 9)} \text{ Ans.}$

$$Q12 \quad \frac{5}{5+x-18x^2} - \frac{2}{2+5x+2x^2}$$

$$\frac{5}{-18x^2+x+5} - \frac{2}{2x^2+5x+2}$$

$$\frac{-5}{18x^2-x-5} - \frac{2}{2x^2+5x+2}$$

$$\frac{-5}{18x^2-10x-9x+5} - \frac{2}{2x^2+4x+1x+2}$$

$$\frac{2x(9x-5)+1(9x-5)}{(9x-5)(2x+1)} - \frac{2x(x+2)+1(x+2)}{(x+2)(2x+1)}$$

$$\frac{-5(x+2)-2(9x-5)}{(2x+1)(x+2)(9x-5)} = \frac{-5x-10-18x+10}{(2x+1)(x+2)(9x-5)}$$

$$\frac{-23x}{(2x+1)(x+2)(9x-5)}$$

Taking minus common from $9x-5$

$$\frac{23x}{(5-9x)(2x+1)(x+2)}$$

$$\frac{23x}{(5-9x)(2x+1)(x+2)} \quad \text{Ans.}$$

$$Q13 \frac{1-p^2}{1+q} \times \frac{1-q^2}{p+q^2p^2} \times \left[\frac{1+p}{1-p} \right]$$

$$\frac{(1)^2 - (p)^2}{1+q} \times \frac{(1)^2 - (q)^2}{p+p^2p(1+p)} \times \left[\frac{1+p}{1-p} \right]$$

$$\frac{(1-\frac{p}{q})(1+\frac{p}{q})}{(1+q)} \times \frac{(1-q)(1+q)}{p(1+p)} \times \left[\frac{1}{1-p} \right]$$

$$\frac{(1-p)(1+p)}{(1+q)} \times \frac{(1-q)(1+q)}{p(1+p)} \times \frac{1}{(1-p)}$$

$$\frac{(1-q)}{p} \text{ Ans.}$$