8th Algebric expression Solved Test papers

(1) Substract: $4p^2+5q^2-6r^2+7$ from $3p^2-4q^2-5r^2-6$

(2) What must be substracted from $(3a^2-6ab-3b^2-1)$ to get $(4a^2-7ab-4b^2+1)$

(3) Find Product: (i) $\left(x^4+\frac{1}{x^4}\right)\left(x+\frac{1}{x}\right)$ (ii) $(x^2+xy+y^2)(x-y)$ (iii) $(x^2-5x+8)(x^2+2x-3)$

4. Devide: (i) $(2x^2+3x+1)$ by $(x+1)$ (ii) x^3-6x^2+9x-2 by $(x-2)$

5. Find remainder when $(7+15x-13x^2+5x^3)$ devided by $(4-3x+x^2)$

6. Find quotient (when) and remainder: (i) (x^3-1) is devided by $(x-1)$ (ii) (x^3+1) devided by $(x+1)$

7. Find continuous product: (i) $(x+1)(x-1)(x^2+1)$ (ii) $(2p+3)(2p-3)(4p^2+9)$

8. if $x+\frac{1}{x}=4$ Find $\left(x^2+\frac{1}{x^2}\right)$ and $\left(x^4+\frac{1}{x^4}\right)$

9. If $(x-y)=7$ and $xy=9$ Find (x^2+y^2)

(10) Semplify: $\dfrac{198\times198-102\times102}{98}$

Solution

1. $3p^2-4q^2-5r^2-6$

$\ominus\ -\ \ +\ \ -$

$4p^2+5q^2-6r^2+7$

$-p^2-9q^2+r^2-13$

2. $(3a^2-6ab-3b^2-1)-P=(4a^2-7ab-4b^2+1)$

$(3a^2-6ab-3b^2-1-4a^2+7ab+4b^2-1)=P$

$\Rightarrow \boxed{-a^2+ab+b^2-2=P}$

3.(i) $x^4\left(x+\frac{1}{x}\right)+\frac{1}{x^4}\left(x+\frac{1}{x}\right)=x^5+\frac{x^4}{x}+\frac{x}{x^4}+\frac{1}{x^5}$

$=x^5+\frac{x^3}{1}+\frac{1}{x^3}+\frac{1}{x^5}$

3(ii) $x(x^2+xy+y^2)-y(x^2+xy+y^2)$

$=x^3+x^2y+xy^2-x^2y-xy^2-y^3=x^3-y^3$

3(iii) $x^2(x^2+2x-3)-5x(x^2+2x-3)+8(x^2+2x-3)$

$=x^4+2x^3-3x^2-5x^3-10x^2+15x+8x^2+16x-24$

$=x^4-3x^3-5x^2+31x-24$

4.(i) $x+1 \overline{)2x^2+3x+1}$ $(2x$

$2x^2+2x$

$x+1$

$x+1$

$0+0$

Terms of quotient

$\frac{2x^2}{x} = 2x$ — (I)

$\frac{x}{x} = 1$ — (II)

(ii) $(x-2) \overline{)x^3-6x^2+9x-2}$ $(x^2-4x+1$

x^3-2x^2

$-4x^2+9x-2$

$-4x^2+8x$

$x-2$

$x-2$

0

Terms of quotient

$\frac{x^3}{x} = x^2$ — (I)

$\frac{-4x^2}{x} = -4x$ — (II)

$\frac{x}{x} = 1$ — (III)

5. $x^2-3x+4 \overline{)5x^3-13x^2+15x+7}$ $(5x+2$

$5x^3-15x^2+20x$

$2x^2-5x+7$

$2x^2-6x+8$

$(x-1)$

Terms of quotient

$\frac{5x^3}{x^2} = 5x$ — (I)

$\frac{2x^2}{x^2} = 2$ — (II)

Remainder $= (x-1)$, $Q = (5x+2)$

6.(i) $(x-1) \overline{)x^3-1}$ $(x^2+x+1$

x^3-x^2

x^2-1

x^2-x

$x-1$

$x-1$

0

Terms of quotient.

$\frac{x^3}{x} = x^2$ — (I)

$\frac{x^2}{x} = x$ — (II)

$x/x = 1$ — (III)

Quotient $= x^2+x+1$

(ii) $x+1 \overline{)x^3+1}$ $(x^2-x+1$

x^3+x^2

$-x^2+1$

$-x^2-x$

$x+1$

$x+1$

0

Terms of quotients

$\frac{x^3}{x} = x^2$ — (I)

$\frac{-x^2}{x} = -x$

$x/x = 1$

7. (i) $\underbrace{(x+1)(x-1)}(x^2+1)$

using $(a+b)(a-b) = a^2-b^2$

$= \{(x)^2-(1)^2\}(x^2+1)$

$= \{x^2-1\}\{x^2+1\}$

$= (x^2)^2-(1)^2$

$= x^4-1$

(ii) $\underbrace{(2p-3)(2p+3)}(4p^2+9)$

$= (4p^2-9)(4p^2+9)$

$= (4p^2)^2-(9)^2$

$= 16p^4-81$

8. Given $x+\frac{1}{x}=4$. Squaring both sides

$\Rightarrow \left(x+\frac{1}{x}\right)^2 = (4)^2 \Rightarrow x^2+\frac{1}{x^2}+2x\times\frac{1}{x}=16$

$\Rightarrow \boxed{x^2+\frac{1}{x^2}} = 16-2 = \boxed{14}$ — Ans

$\Rightarrow$ Again squaring both sides

$\left(x^2+\frac{1}{x^2}\right)^2 = (14)^2$

$x^4+\frac{1}{x^4}+2\times x^2\times\frac{1}{x^2}=196$

$\left(x^4+\frac{1}{x^4}\right) = 196-2 = \boxed{194}$ — Ans

9. $(x-y)^2=(7)^2$ $\Rightarrow x^2+y^2-2xy=49$

$\Rightarrow x^2+y^2-2\times 9=49$

$\Rightarrow \boxed{x^2+y^2} = 49+18 = \boxed{67}$ — Ans.

(10) $\frac{(198)^2-(102)^2}{98} = \frac{(198-102)(198+102)}{96} = \frac{96\times 300}{96} = \boxed{300}$ — Ans