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कक्षा - 10

गणित

अध्याय - 2

बहुपद

भाग - 3

केशव शर्मा

प्रश्नावली 2.2 :

Q.1 निम्न द्विघात बहुपदों के शून्यक ज्ञात कीजिए और शून्यकों तथा गुणांकों के बीच के संबंध की सत्यता की जाँच कीजिए :

(i) $x^2 - 2x - 8$

प्रश्नावली 2.2

(ii) $4s^2 - 4s + 1$

$4 \times 1 = 4$

$-2 \quad -2$

$-4s = -2s - 2s$

$4s^2 - 2s - 2s + 1$

$2s(2s-1) - 1(2s-1)$

$(2s-1)(2s-1)$

$(2s-1)^2$

$2s-1=0$	$2s-1=0$
$s=\frac{1}{2}$	$s=\frac{1}{2}$

$(2s-1)^2 = 0$

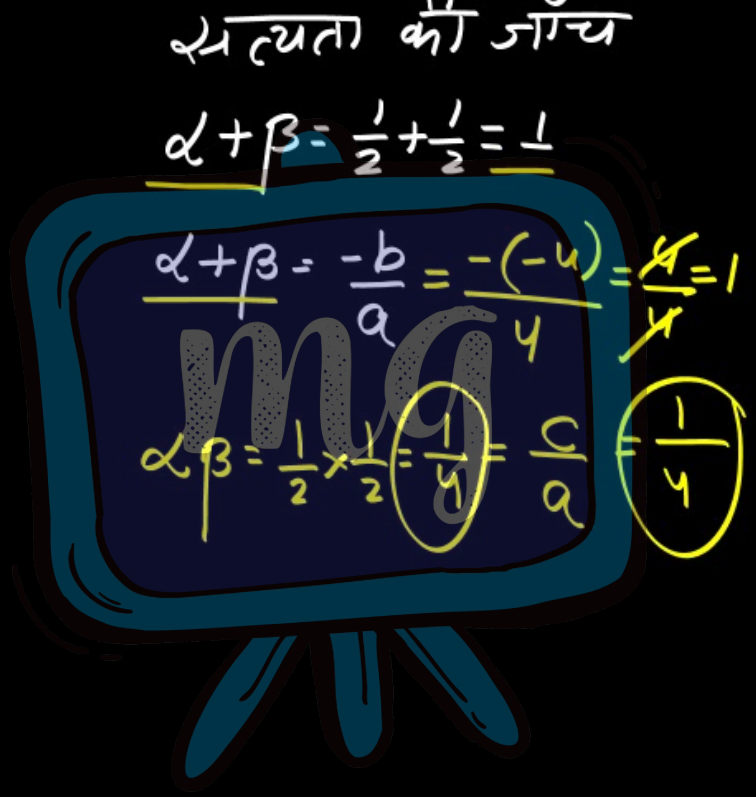
$2s-1=0$

$s=\frac{1}{2}$

$\frac{1}{2}$

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$4s^2-4s+1$

ax^2+bx+c

$a=4$

$b=-4$

$c=1$

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(iii) $6x^2 - 3 - 7x$

$6x^2 - 7x - 3$

$6 \times (-3) = -18$

$-9 \quad 2$

$-9 + 2 = -7$

$-7x = 2x - 9x$

$6x^2 + 2x - 9x - 3$

$2x(3x+1) - 3(3x+1)$

$(3x+1)(2x-3)$

$3x + 1 = 0$

$3x = -1$

$x = -\frac{1}{3}$

$2x - 3 = 0$

$2x = 3$

$x = \frac{3}{2}$

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$6x^2 - 7x - 3$

$ax^2 + bx + c$

$a = 6, \; b = -7, \; c = -3$

सत्यता की जाँच

$$\alpha + \beta = -\frac{1}{3} + \frac{3}{2} = \frac{-2 + 9}{6} = \frac{7}{6}$$

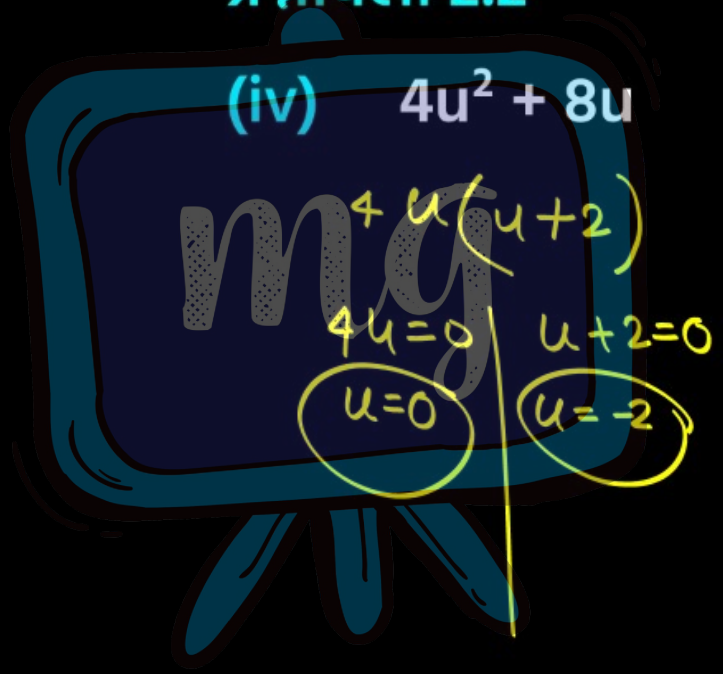
$$\alpha + \beta = -\frac{b}{a} = -\frac{(-7)}{6} = \frac{7}{6}$$

$$\alpha\beta = -\frac{1}{\beta_1} \times \frac{\beta}{2} = \frac{-1}{2}$$

$$\alpha\beta = \frac{c}{a} = -\frac{\beta}{\beta_2} = \frac{-1}{2}$$

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(iv) $4u^2 + 8u$



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$+u^2+8u+0$

ax^2+bx+c

$a=4$

$b=8$

$c=0$

सत्यता की जाँच

$\alpha+\beta=0+(-2)=0-2=-2$

$\alpha+\beta=-\frac{b}{a}=-\frac{8}{4}=-2$

$\alpha\beta=0\times(-2)=0$

$\alpha\beta=\frac{c}{a}=\frac{0}{4}=0$

प्रश्नावली 2.2

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

(v) $t^2 - 15$

$(\sqrt{15})^2 = 15$

$t^2 - (\sqrt{15})^2$

$(t+\sqrt{15})(t-\sqrt{15})$

$t+\sqrt{15}=0$ | $t-\sqrt{15}=0$

$t=-\sqrt{15}$ | $t=\sqrt{15}$

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ax^2+bx+c

$1.t^2-15$

$a=1$

$b=0$

$c=-15$

सत्यता की जाँच

$$\alpha+\beta=\sqrt{15}+(-\sqrt{15})$$

$$\sqrt{15}-\sqrt{15}=0$$

$$\alpha+\beta=\frac{-b}{a}=\frac{-0}{1}=0$$

$$\alpha\beta=\sqrt{15}\,(-\sqrt{15})=-(\sqrt{15}\times\sqrt{15})$$

$$=-15$$

$$\alpha\beta=\frac{c}{a}=\frac{-15}{1}=-15$$

प्रश्नावली 2.2

(vi) $3x^2 - 1x - 4$

$3x^2 + 3x - 4x - 4$

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

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

$x+1=0$ | $3x-4=0$

$x=-1$ | $3x=4$

$x=\frac{4}{3}$

$3x-4=-12$

$-4 \quad 3$

$-x = 3x-4x$

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सत्यता की जाँच

$3x^2 - x - 4$

$ax^2 + bx + c$

$\alpha + \beta = \frac{-1}{1} + \frac{4}{3} = \frac{-3+4}{3} = \frac{1}{3}$

$a = 3$

$b = -1$

$c = -4$

$\alpha + \beta = \frac{-b}{a} = \frac{-(-1)}{3} = \frac{1}{3}$

$\alpha\beta = -1 \times \frac{4}{3} = \frac{-4}{3}$

$\alpha\beta = \frac{c}{a} = \frac{-4}{3}$

प्रश्नावली 2.2 :

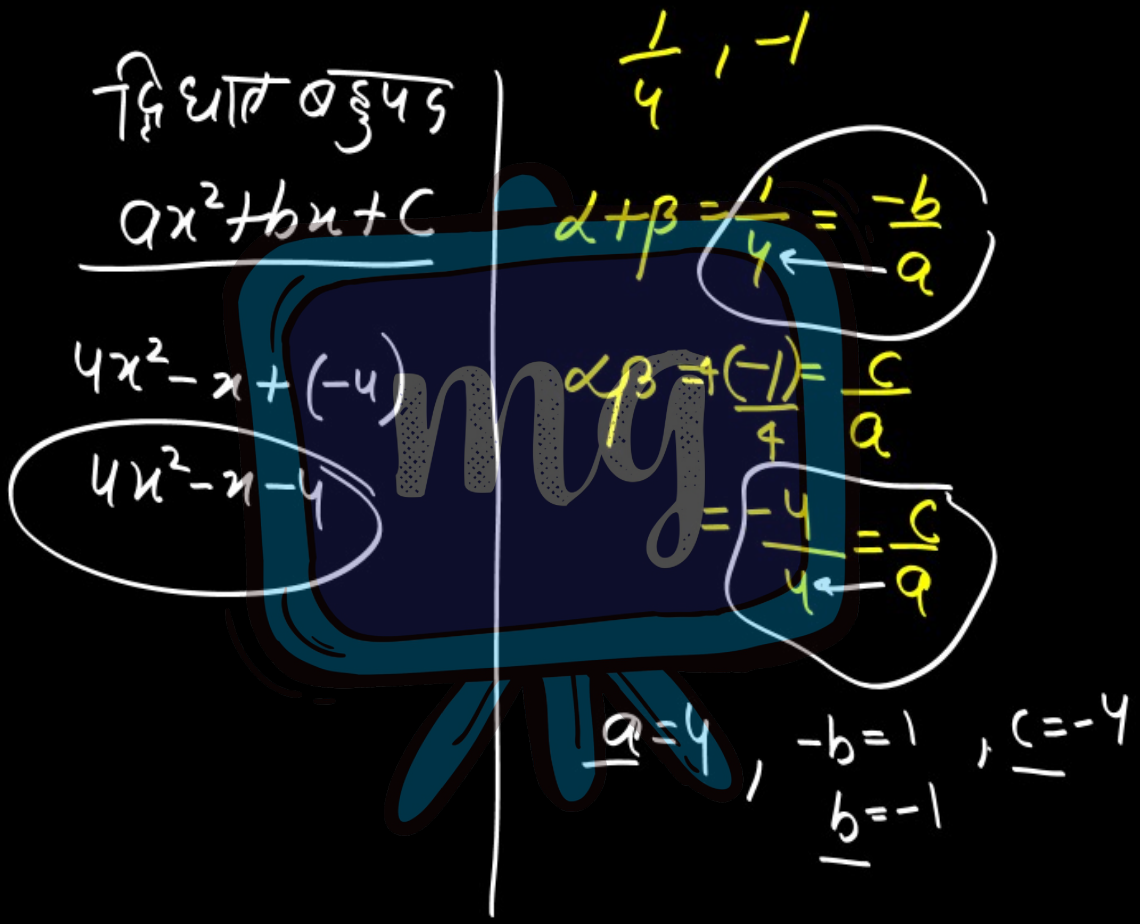
Q.2 एक द्विघात बहुपद ज्ञात कीजिए, जिसके शून्यकों के योग तथा गुणनफल क्रमशः दी गई संख्याएँ हैं:

(i) $\frac{1}{4}, -1$

$\alpha+\beta$ $\alpha\beta$

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प्रश्नावली 2.2

द्विघात बहुपद (ii) $\sqrt{2}, \frac{1}{3}$

$\Rightarrow ax^2+bx+c$

$3x^2-3\sqrt{2}x+1$

$\alpha+\beta=\frac{3\sqrt{2}}{3}=-\frac{b}{a}$

$\alpha\beta=\frac{1}{3}=\frac{c}{a}$

$a=3, \quad -b=3\sqrt{2}, \quad c=1$

$b=-3\sqrt{2}$

प्रश्नावली 2.2

द्विघात बहुपद

$\Rightarrow ax^2+bx+c$

(iii) $0, \sqrt{5}$

$1x^2+0\times x+\sqrt{5}$

$x^2+\sqrt{5}$

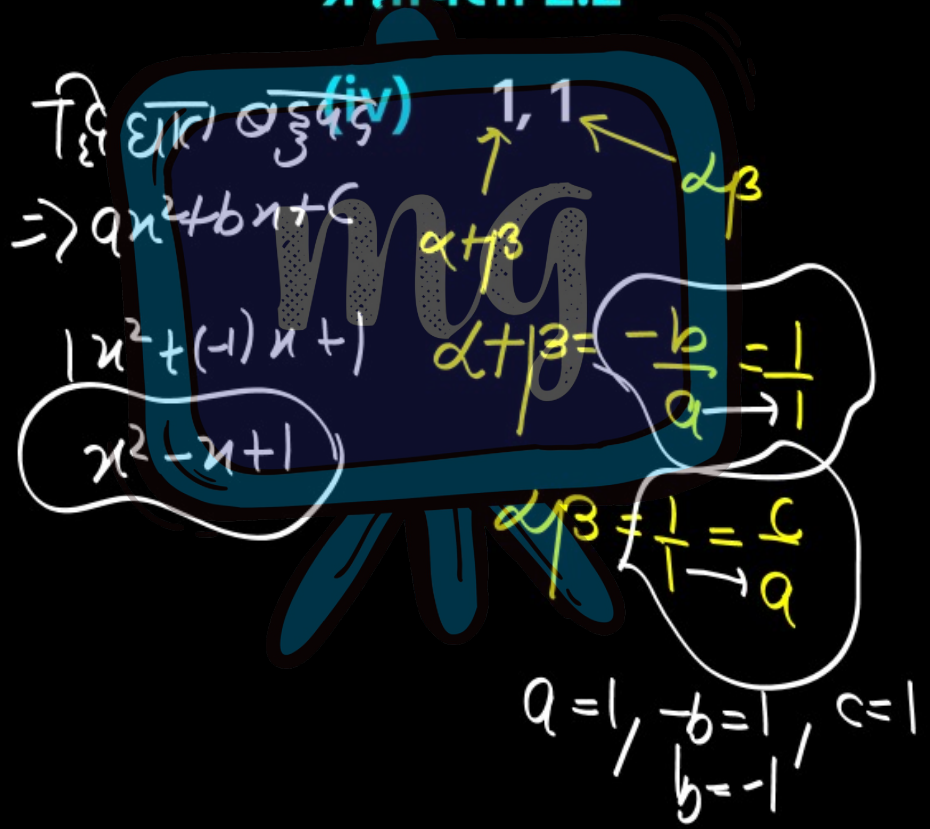
$\alpha+\beta=\frac{0}{1}=\frac{-b}{a}$

$\alpha\beta=\frac{\sqrt{5}}{1}=\frac{c}{a}$

$a=1, \quad -b=0, \quad c=\sqrt{5}$

$b=0$

प्रश्नावली 2.2



प्रश्नावली 2.2

(v) $-\frac{1}{4}, \frac{1}{4}$

ax^2+bx+c

$4x^2+x+1$

$\alpha+\beta = \frac{-b}{a} = \frac{-1}{4}$

$\alpha\beta = \frac{1}{4} = \frac{c}{a}$

$a=4,\ c=1,\ +b=+1$

$b=1$

प्रश्नावली 2.2

(vi) 4, 1

ax^2+bx+c $\alpha+\beta=\frac{4}{1}=\frac{-b}{a}$

x^2-4x+1 $\alpha\beta=\frac{1}{1}=\frac{c}{a}$

$a=1, -b=4, c=1$

$b=-4$