

Ex 4.3

NCERT Solutions by Dev Anoop (Bathinda)

30) $x - \frac{1}{x} = 3, \quad x \neq 0$

$\Rightarrow \frac{x^2 - 1}{x} = 3$

$\Rightarrow x^2 - 1 = 3x$

$\Rightarrow x^2 - 3x - 1 = 0$

$a = 1, b = -3, c = -1$

$D = b^2 - 4ac$

$= (-3)^2 - 4 \times 1 \times (-1)$

$= 9 + 4$

$= 13$

$x = \frac{-b \pm \sqrt{D}}{2a}$

$= \frac{3 \pm \sqrt{13}}{2}$

\therefore roots are $\frac{3 \pm \sqrt{13}}{2}$

31) $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$

$\Rightarrow \frac{x-7 - (x+4)}{(x+4)(x-7)} = \frac{11}{30}$

$\Rightarrow \frac{x-7-x-4}{x^2-3x-28} = \frac{11}{30}$

$\Rightarrow \frac{-11}{x^2-3x-28} = \frac{11}{30}$

$\Rightarrow x^2 - 3x - 28 = -30$

$\Rightarrow x^2 - 3x + 2 = 0$

$\Rightarrow x^2 - 2x - x + 2 = 0$

$\Rightarrow x(x-2) - 1(x-2) = 0$

$\Rightarrow (x-2)(x-1) = 0$

$\Rightarrow x-2=0, x-1=0$

$\Rightarrow x=2, x=1$

\therefore roots are 1, 2

4) let Lehman's present age = x years

acc to prob

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

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

$\Rightarrow \frac{2x+2}{x^2+2x-15} = \frac{1}{3}$

$\Rightarrow 6x+6 = x^2+2x-15$

$\Rightarrow x^2 - 4x - 21 = 0$

$\Rightarrow x^2 - 7x + 3x - 21 = 0$

$\Rightarrow x(x-7) + 3(x-7) = 0$

$\Rightarrow (x-7)(x+3) = 0$

$\Rightarrow x-7=0, x+3=0$

$\Rightarrow x=7, x=-3$

rejected as age is not negative

\therefore Lehman's present age = 7 years

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