Ncert Solutions Chapter 4 Quadratic Equations Exercise 4.3 Question 4

Question 4. The sum of reciprocals of Rehman's ages (in years) 3 years ago and 5 years from now is $\dfrac{1}{3}$. Find his present age.

Solution :

Let present age of Rehman=x years

Age of Rehman 3 years ago $=(x-3)$ years

Age of Rehman after 5 years $=(x+5)$ years

According to the given condition :

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

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

$$\Rightarrow 3(2x+2)=(x^2-3x+5x-15)$$

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

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

Comparing quadratic equation $x^2-4x-21=0$ with general form $ax^2+bx+c=0$, we get

$a=1,\ b=-4$ and $c=-21$

Using quadratic formula $x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$ to solve Quadratic equation, , we get

$$x=\frac{4\pm\sqrt{(-4)^2-4(1)(-21)}}{2}$$

$$\Rightarrow x=\frac{4\pm\sqrt{16+84}}{2}$$

$$\Rightarrow x=\frac{4\pm 10}{2}$$

$$\Rightarrow x=\frac{4+10}{2},\frac{4-10}{2}$$

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

Age cannot be in negative. Therefore, we discard $x=-3$.

Therefore, present age of Rehman is 7 years.

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