



Quadratic Equations Ex 8.3 Q33

Answer :

We have been given that,

$$(x-5)(x-6) = \frac{25}{(24)^2}$$

$$x^2 - 11x + 30 - \frac{25}{576} = 0$$

$$x^2 - 11x + \frac{17255}{576} = 0$$

Now, we solve the quadratic equation obtained above using factorization method,

$$x^2 - \frac{145}{24}x - \frac{119}{24}x + \frac{17255}{576} = 0$$

$$x\left(x - \frac{145}{24}\right) - \frac{119}{24}\left(x - \frac{145}{24}\right) = 0$$

$$\left(x - \frac{119}{24}\right)\left(x - \frac{145}{24}\right) = 0$$

Now, one of the products must be equal to zero for the whole product to be zero. Hence we equate both the products to zero in order to find the value of x .

Therefore,

$$x - \frac{119}{24} = 0$$

$$x = \frac{119}{24}$$

Or

$$x - \frac{145}{24} = 0$$

$$x = \frac{145}{24}$$

$$\text{Hence, } \boxed{x = \frac{119}{24} = 4\frac{23}{24}} \text{ or } \boxed{x = \frac{145}{24} = 6\frac{1}{24}} .$$

Quadratic Equations Ex 8.3 Q34

Answer :

We have been given,

$$7x + \frac{3}{x} = 35\frac{3}{5}$$
$$7x^2 + 3 = \left(35 + \frac{3}{5}\right)x$$

$$7x^2 - \left(35 + \frac{3}{5}\right)x + 3 = 0$$

Now we solve the above quadratic equation using factorization method.

Therefore,

$$7x^2 - 35x - \frac{3}{5}x + 3 = 0$$
$$7x(x-5) - \frac{3}{5}(x-5) = 0$$
$$\left(7x - \frac{3}{5}\right)(x-5) = 0$$

Now, one of the products must be equal to zero for the whole product to be zero. Hence we equate both the products to zero in order to find the value of x .

Therefore,

$$7x - \frac{3}{5} = 0$$

$$7x = \frac{3}{5}$$

$$x = \frac{3}{35}$$

Or

$$x - 5 = 0$$

$$x = 5$$

Hence, $\boxed{x = \frac{3}{35}}$ or $\boxed{x = 5}$.

Answer :

We have been given,

$$\begin{aligned}\frac{a}{(x-a)} + \frac{b}{(x-b)} &= \frac{2c}{(x-c)} \\ a(x-b)(x-c) + b(x-a)(x-c) &= 2c(x-a)(x-b) \\ a(x^2 - (b+c)x + bc) + b(x^2 - (a+c)x + ac) &= 2c(x^2 - (a+b)x + ab) \\ (a+b-2c)x^2 - (2ab-ac-bc)x &= 0\end{aligned}$$

Now we solve the above quadratic equation.

Therefore,

$$x[(a+b-2c)x - (2ab-ac-bc)] = 0$$

Now, one of the products must be equal to zero for the whole product to be zero. Hence we equate both the products to zero in order to find the value of x .

Therefore,

$$x = 0$$

Or

$$\begin{aligned}(a+b-2c)x - (2ab-ac-bc) &= 0 \\ (a+b-2c)x &= (2ab-ac-bc) \\ x &= \frac{(2ab-ac-bc)}{(a+b-2c)}\end{aligned}$$

$$\text{Hence, } \boxed{x=0} \text{ or } \boxed{x = \frac{(2ab-ac-bc)}{(a+b-2c)}}.$$

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