

Quadratic Equations Ex 8.9 Q5

Answer:

Let the present age of two friends be x years and (20 - x) years respectively.

Then, 4 years later, the age of two friends will be (x - 4) years and (20 - x - 4) years respectively Then according to question,

$$(x-4)(20-x-4)=48$$

$$(x-4)(16-x)=48$$

$$16x - x^2 - 64 + 4x = 48$$

-x2+20x-64-48=0

x2-20x+112=0

Let D be the discriminant of the above quadratic equation.

 $D = b^2 - 4ac$

Putting the value of a = 1, b = -20 and c = 112

D=-202-4×1×112

= - 48

Thus, D < 0

So, the above equation does not have real roots.

Hence, the given situation is not possible

Quadratic Equations Ex 8.9 Q6

Answer:

Let the present age of girl be x years then, age of her sister $\left(\frac{x}{2}\right)$ years

Then, 4 years later, age of girl = (x+4) years and her sister's age be $(\frac{x}{2}+4)$ years

Then according to question,

$$(x+4)(\frac{x}{2}+4)=160$$

$$(x+4)(x+8)=160\times 2$$

$$x^2 + 8x + 4x + 32 = 320$$

$$x^2 + 12x + 32 - 320 = 0$$

$$x^2 + 12x - 288 = 0$$

$$x^2 + 12x - 288 = 0$$

$$x^2 - 12x + 24x - 288 = 0$$

$$x(x-12)+24(x-12)=0$$

$$(x-12)(x+24)=0$$

So, either

$$(x-12)=0$$

$$x = 12$$

Or

$$(x+24)=0$$

$$x = -24$$

But the age never be negative

Therefore, when x = 12 then

$$\frac{x}{2} = \frac{12}{2}$$
$$= 6$$

Hence, the present age of girl be = 12 years and her sister's age be 6 years

Answer:

Let the present age of Rehman be x years Then, 8 years later, age of her =(x+5) years Five years ago, her age =(x-3) years Then according to question,

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

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

$$\frac{2x+2}{x^2+5x-3x-15} = \frac{1}{3}$$

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

$$x^2+2x-15-6x-6=0$$

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

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

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

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

So, either

$$(x-7) = 0$$
$$x = 7$$

Or

$$(x+3) = 0$$
$$x = -3$$

But the age never be negative

Hence, the present age of Rehman be = 7 years

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