Answer on Question #60376 – Math – Algebra

Question

Factorise then solve this equation

x^2 – 3x – 40 = 0

Solution

$$x^2 - 3x - 40 = 0 \;\rightarrow\; x^2 + 5x - 8x - 40 = 0 \;\rightarrow$$

$$\rightarrow\; x(x+5) - 8(x+5) = 0 \;\rightarrow\; (x+5)(x-8) = 0.$$

So $x = -8$ and $x = 5$ are the solutions.

Question

Explain how you could use your answer to the above first answer, to solve the equation here

8x^2 – 24x – 320 = 0

What are the solutions?

Solution

$$8x^2 - 24x - 320 = 0 \;\rightarrow\; 8(x^2 - 3x - 40) = 0$$

We found

$$x^2 - 3x - 40 = (x+5)(x-8),$$

therefore,

$$8x^2 - 24x - 320 = 8(x+5)(x-8)$$

$$8(x+5)(x-8) = 0$$

So $x = -8$ and $x = 5$ are also the solutions of equation $8x^2 - 24x - 320 = 0$.

Question

Solve this equation

$$\frac{11}{x-6} = \frac{6}{x-11}$$

Solution

$$\frac{11}{x-6} = \frac{6}{x-11} \;\rightarrow\; 11(x-11) = 6(x-6) \;\rightarrow\; 5x = 85 \;\rightarrow\; x = 17\,.$$