

Answer on Question#37616 - Math - Other

What two numbers add to give 15 but multiply to give -26026 ?

Solution. Let us write the conditions as a system of equations, denoting the numbers as x_1 and x_2 :

$$\begin{cases} x_1 + x_2 = 15, \\ x_1 * x_2 = -26026. \end{cases}$$

From the first equation, we can express x_2 as a function of x_1 :

$$x_2 = 15 - x_1.$$

We now substitute this into the second equation:

$$x_1 * (15 - x_1) = -26026$$

$$-x_1^2 + 15x_1 + 26026 = 0$$

$$x_1^2 - 15x_1 - 26026 = 0$$

This is a quadratic equation which can be solved as follows:

$$x = \frac{15 \pm \sqrt{15^2 + 4 * 26026}}{2} = \frac{15 \pm \sqrt{104329}}{2} = \frac{15 \pm 323}{2}.$$

Thus, we have

$$x_1 = \frac{15 + 323}{2} = \frac{338}{2} = 169,$$

$$x_2 = \frac{15 - 323}{2} = \frac{-308}{2} = -154.$$

These numbers satisfy our initial conditions, which can be checked by substituting them into the equations: $169 - 154 = 15$, $169 * (-154) = -26026$.

Answer. $x_1 = 169$, $x_2 = -154$.