

ANSWER ON QUESTION #74491 – MATH – ALGEBRA

Question

In the following equation solve for the unknown variable $\frac{6}{15d} + \frac{9}{30d} - \frac{1}{6d} = d + 1.5 - \frac{2}{12d}$

Solution

$$\frac{6}{15d} + \frac{9}{30d} - \frac{1}{6d} = d + 1.5 - \frac{2}{12d}$$

$$\frac{6}{15d} + \frac{9}{30d} - \frac{1}{6d} = d + 1.5 - \frac{1}{6d}$$

$$\frac{6}{15d} + \frac{9}{30d} - \frac{1}{6d} + \frac{1}{6d} - d = 1.5$$

$$\frac{6}{15d} + \frac{9}{30d} - d = 1.5$$

$$\frac{12 + 9 - 30d^2}{30d} = 1.5$$

$$12 + 9 - 30d^2 = 45d$$

$$30d^2 + 45d - 21 = 0$$

Divide this equation by 3 for both sides;

$$10d^2 + 15d - 7 = 0 \dots \dots \dots (i)$$

We can solve this equation by using the following quadratic formula:

$$d = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a},$$

where

$$a = 10,$$

$$b = 15,$$

$$c = -7.$$

Then

$$d = \frac{-15 \pm \sqrt{15^2 - 4 * 10 * (-7)}}{2 * 10}$$

$$d = \frac{-15 \pm \sqrt{505}}{20}$$

$$d = \frac{-15 \pm 22.47}{20}$$

With positive sign, the value is:

$$d = \frac{-15 + 22.47}{20} \Rightarrow 0.37$$

With negative sign, the value is:

$$d = \frac{-15 - 22.47}{20} \Rightarrow -1.87$$

So, the value of unknown variable is 0.37; -1.87.

Answer: 0.37; -1.87.

Solution

$$\frac{6}{15}d + \frac{9}{30}d - \frac{1}{6}d = d + 1.5 - \frac{2}{12}d$$

$$\frac{24}{60}d + \frac{18}{60}d - \frac{10}{60}d - \frac{60}{60}d + \frac{10}{60}d = 1.5$$

$$-\frac{18}{60}d = 1.5$$

$$d = -\frac{1.5 \cdot 60}{18}$$

$$d = -5$$

Answer: d = -5.

Answer provided by <https://www.AssignmentExpert.com>