

Solution of the Legible Math Problem

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System of Equations

$$\begin{aligned}z e r o &= 0, \\o n e &= 1, \\t w o &= 2, \\t h r e e &= 3, \\f o u r &= 4, \\f i v e &= 5, \\s i x &= 6, \\s e v e n &= 7, \\e i g h t &= 8, \\n i n e &= 9, \\t e n &= 10, \\e l e v e n &= 11, \\n e g a t i v e &= -1.\end{aligned}$$

1. From the first equation:

$$z e r o = 0$$

Since $e, r, o \neq 0$, we conclude $z = 0$.

2. Introduce free parameters:

$$o, e, r, v$$

be four arbitrary nonzero real numbers.

3. From the equation

$$one = 1 \implies n = \frac{1}{oe}.$$

4. From the equation

$$ten = 10 \implies t = 10o.$$

5. From the equation

$$(10o)wo = 2 \implies w = \frac{1}{5o^2}.$$

6. From the equation

$$(10o)hre^2 = 3 \implies h = \frac{3}{10ore^2}.$$

7. From the equation

$$\left(\frac{1}{oe}\right)i\left(\frac{1}{oe}\right)e = 9 \implies i = 9o^2e.$$

8. From the equation

$$f(9o^2e)ve = 5 \implies f = \frac{5}{9o^2e^2v}.$$

9. From the equation

$$four = 4 \implies u = \frac{4}{for} = \frac{36oe^2v}{5r}.$$

10. From the equation

$$se^2vn = 7 \implies s = \frac{7o}{ev}.$$

11. From the equation

$$\left(\frac{7o}{ev}\right)(9o^2e)x = 6 \implies x = \frac{2v}{21o^3}.$$

12. From the equation

$$e(9o^2e)g\left(\frac{3}{10ore^2}\right)(10o) = 8 \implies g = \frac{8r}{27o^2}.$$

13. From the equation

$$e^3lvn = 11 \implies l = \frac{11o}{e^2v}.$$

14. From the equation

$$\left(\frac{1}{oe}\right)e^2\left(\frac{8r}{27o^2}\right)a(10o)(9o^2e)v = -1 \implies a = -\frac{3}{80e^2rv}.$$

General Solution Summary

$$\begin{aligned} z &= 0, & o, e, r, v & \text{ free parameters,} \\ n &= \frac{1}{oe}, & t &= 10o, & w &= \frac{1}{5o^2}, & h &= \frac{3}{10ore^2}, \\ i &= 9o^2e, & f &= \frac{5}{9o^2e^2v}, & u &= \frac{36oe^2v}{5r}, & s &= \frac{7o}{ev}, \\ x &= \frac{2v}{21o^3}, & g &= \frac{8r}{27o^2}, & l &= \frac{11o}{e^2v}, & a &= -\frac{3}{80e^2rv}. \end{aligned}$$

Concrete Example

We choose

$$o = 1, \quad e = 1, \quad r = 1, \quad v = 1.$$

Then

$$\begin{aligned} z &= 0, \\ o &= 1, \quad e = 1, \quad r = 1, \quad v = 1, \\ n &= 1, \quad t = 10, \quad w = \frac{1}{5}, \quad h = \frac{3}{10}, \\ i &= 9, \quad f = \frac{5}{9}, \quad u = \frac{36}{5}, \quad s = 7, \\ x &= \frac{2}{21}, \quad g = \frac{8}{27}, \quad l = 11, \quad a = -\frac{3}{80}. \end{aligned}$$