

Solving Rational Expressions Assignment

Solve the following rational expression by finding the value of the unknown variable.

1. $\frac{x}{4} = \frac{3}{8}$

2. $5 + \frac{y}{3} = y + 2$

3. $\frac{h+2}{5} - \frac{h-1}{9} = \frac{2}{3}$

4. $\frac{9}{25-y} = -\frac{1}{4}$

5. $5 - \frac{12}{a} = \frac{5}{3}$

6. $\frac{12}{y+5} + \frac{1}{2} = 2$

7. $\frac{4}{2x+3} + \frac{17}{5(2x+3)} = 3$

8. $\frac{6}{x-3} = 3$

9. $\frac{c+1}{2} = \frac{c+2}{3}$

10. $\frac{4q}{3} = \frac{2q-1}{5}$

Solving Rational Expressions Assignment

Determine whether the following value of x is a solution to the equation.

$$\frac{x}{3} - \frac{x}{5} = \frac{4}{3}$$

11. $x = 0$

12. $x = -1$

13. $x = \frac{1}{8}$

14. $x = 10$

Find solution for the following rational expressions.

15. $\frac{6}{a} + \frac{3}{4} = 1$

16. $\frac{5}{t} = 3 - \frac{1}{t}$

17. $\frac{3k}{5} + 2 = \frac{1}{4}$

18. $\frac{2r}{7} - 5 = r$

19. $\frac{6}{x-3} = 3$

20. $\frac{m-4}{4} = \frac{m+8}{16}$

Solving Rational Expressions Assignment

Answer:

Solve the following rational expression by finding the value of the unknown variable.

1. $\frac{x}{4} = \frac{3}{8}$

Solution:

$$8\left(\frac{x}{4}\right) = 8\left(\frac{3}{8}\right)$$

$$2x = 3$$

$$x = \frac{3}{2}$$

2. $5 + \frac{y}{3} = y + 2$

Solution:

$$3\left(5 + \frac{y}{3}\right) = 3(y + 2)$$

$$15 + y = 3y + 6$$

$$2y = 9$$

$$y = \frac{9}{2}$$

3. $\frac{h+2}{5} - \frac{h-1}{9} = \frac{2}{3}$

Solution:

$$45\left(\frac{h+2}{5}\right) - 45\left(\frac{h-1}{9}\right) = 45\left(\frac{2}{3}\right)$$

$$9h + 18 - 5h + 5 = 30$$

$$4h = 7$$

$$h = \frac{7}{4}$$

4. $\frac{9}{25-y} = -\frac{1}{4}$

Solution:

$$\frac{9}{25-y}[4(25-y)] = -\frac{1}{4}[4(25-y)]$$

$$36 = -25 + y$$

$$y = 61$$

5. $5 - \frac{12}{a} = \frac{5}{3}$

Solution:

$$3a\left(5 - \frac{12}{a}\right) = 3a\left(\frac{5}{3}\right)$$

$$15a - 36 = 5a$$

$$10a = 36$$

$$a = \frac{36}{10} \text{ or } \frac{18}{5}$$

6. $\frac{12}{y+5} + \frac{1}{2} = 2$

Solution:

$$2(y+5)\left(\frac{12}{y+5}\right) + 2(y+5)\left(\frac{1}{2}\right) = 2(y+5)(2)$$

$$24 + y + 5 = 4y + 20$$

$$3y = 9$$

$$y = 3$$

7. $\frac{4}{2x+3} + \frac{17}{5(2x+3)} = 3$

Solution:

$$5(2x+3)\left(\frac{4}{2x+3}\right) + 5(2x+3)\left(\frac{17}{5(2x+3)}\right) = 5(2x+3)(3)$$

$$20 + 17 = 30x + 45$$

$$30x = -8$$

$$x = -\frac{8}{30} \text{ or } -\frac{4}{15}$$

8. $\frac{6}{x-3} = 3$

Solution:

$$(x-3)\left(\frac{6}{x-3}\right) = (x-3)(3)$$

$$6 = 3x - 9$$

$$3x = 15$$

$$x = 5$$

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9. $\frac{c+1}{2} = \frac{c+2}{3}$

Solution:

$$6\left(\frac{c+1}{2}\right) = 6\left(\frac{c+2}{3}\right)$$

$$3c+3 = 2c+4$$

$$c = 7$$

10. $\frac{4q}{3} = \frac{2q-1}{5}$

Solution:

$$15\left(\frac{4q}{3}\right) = 15\left(\frac{2q-1}{5}\right)$$

$$20q = 6q-3$$

$$14q = -3$$

$$q = -\frac{3}{14}$$

Determine whether the following value of x is a solution to the equation.

$$\frac{x}{3} - \frac{x}{5} = \frac{4}{3}$$

11. $x = 0$

Solution:

$$\frac{x}{3} - \frac{x}{5} = \frac{4}{3}$$

$$\frac{0}{3} - \frac{0}{5} = \frac{4}{3}$$

$$0 - 0 \neq \frac{4}{3}$$

12. $x = -1$

Solution:

$$\frac{x}{3} - \frac{x}{5} = \frac{4}{3}$$

$$\frac{-1}{3} - \frac{-1}{5} = \frac{4}{3}$$

$$-\frac{1}{3} + \frac{1}{5} \neq \frac{4}{3}$$

$$-\frac{2}{15} \neq \frac{4}{3}$$

13. $x = \frac{1}{8}$

Solution:

$$\frac{1}{8} - \frac{1}{8} = \frac{4}{3}$$

$$\frac{1}{24} - \frac{1}{40} = \frac{4}{3}$$

$$\frac{1}{60} \neq \frac{4}{3}$$

14. $x = 10$

Solution:

$$\frac{x}{3} - \frac{x}{5} = \frac{4}{3}$$

$$\frac{10}{3} - \frac{10}{5} = \frac{4}{3}$$

$$\frac{4}{3} = \frac{4}{3}$$

Solving Rational Expressions Assignment

Find solution for the following rational expressions.

15. $\frac{6}{a} + \frac{3}{4} = 1$

Solution:

$$(4a)\left(\frac{6}{a}\right) + (4a)\left(\frac{3}{4}\right) = (4a)1$$

$$24 + 3a = 4a$$

$$a = 24$$

Checking:

$$\frac{6}{24} + \frac{3}{4} = 1$$

$$\frac{6+18}{24} = 1$$

$$1 = 1$$

16. $\frac{5}{t} = 3 - \frac{1}{t}$

Solution:

$$t\left(\frac{5}{t}\right) = t(3) - t\left(\frac{1}{t}\right)$$

$$5 = 3t - 1$$

$$3t = 6$$

$$t = 2$$

Checking:

$$\frac{5}{2} = 3 - \frac{1}{2}$$

$$\frac{5}{2} = \frac{6-1}{2}$$

$$\frac{5}{2} = \frac{5}{2}$$

17. $\frac{3k}{5} + 2 = \frac{1}{4}$

Solution:

$$20\left(\frac{3k}{5}\right) + 20(2) = 20\left(\frac{1}{4}\right)$$

$$12k + 40 = 5$$

$$12k = -35$$

$$k = -\frac{35}{12}$$

Checking:

$$-\frac{35}{12}(3) + 2 = \frac{1}{4}$$

$$-\frac{7}{4} + 2 = \frac{1}{4}$$

$$\frac{1}{4} = \frac{1}{4}$$

18. $\frac{2r}{7} - 5 = r$

Solution:

$$7\left(\frac{2r}{7}\right) - 7(5) = 7(r)$$

$$2r - 35 = 7r$$

$$5r = -35$$

$$r = -7$$

Checking:

$$\frac{2(-7)}{7} - 5 = -7$$

$$-2 - 5 = -7$$

$$-7 = -7$$

Solving Rational Expressions Assignment

19.
$$\frac{6}{x-3} = 3$$

Solution:

$$(x-3)\frac{6}{x-3} = 3(x-3)$$

$$6 = 3x - 9$$

$$3x = 15$$

$$x = 5$$

Checking:

$$\frac{6}{5-3} = 3$$

$$\frac{6}{2} = 3$$

$$3 = 3$$

20.
$$\frac{m-4}{4} = \frac{m+8}{16}$$

Solution:

$$16\left(\frac{m-4}{4}\right) = 16\left(\frac{m+8}{16}\right)$$

$$4m - 16 = m + 8$$

$$3m = 24$$

$$m = 8$$

Checking:

$$\frac{8-4}{4} = \frac{8+8}{16}$$

$$\frac{4}{4} = \frac{16}{16}$$

$$1 = 1$$