

Solving IM1-type equations with fractions

Solve each equation.

1) $-\frac{5}{2}r + 2 + \frac{14}{3}r = \frac{29}{8}$

2) $\frac{23}{7}n + \frac{34}{7} - \frac{13}{8}n = \frac{433}{70}$

3) $\frac{7}{2}x - \frac{7}{2}x = \frac{3}{7}$

4) $-\frac{2459}{1344} = -\frac{15}{8}x + \frac{4}{3} + 4\frac{4}{7}$

5) $\frac{221}{168} + \frac{8}{7}n = \frac{11}{6}n + \frac{5}{8}$

6) $\frac{10}{7}x + 4 - \frac{6}{7} = \frac{109}{28} + x$

7) $\frac{33}{5}x + 1 = \frac{62}{25} + \frac{1}{2}x + \frac{17}{4}x$

8) $m - \frac{5}{6}m = -\frac{16}{15} - \frac{1}{2}m$

9) $-2x - \frac{533}{120} = 1 - \frac{7}{3}\left(\frac{5}{3}x + \frac{7}{8}\right)$

10) $-\frac{8}{3}\left(\frac{3}{4}n + 2\right) = -\frac{26}{3} - \frac{1}{3}n$

$$11) -\frac{1245}{32} + \frac{1}{2}a = -\frac{49}{8}\left(\frac{18}{5}a + \frac{7}{4}\right)$$

$$12) -\frac{7}{4} + \frac{7}{5}\left(\frac{7}{8}n + 1\right) = -\frac{929}{80} - \frac{11}{4}n$$

$$13) -2\left(\frac{2}{5}x + \frac{27}{5}\right) = -2\left(x + \frac{19}{4}\right)$$

$$14) -\frac{25}{8}\left(v - \frac{23}{7}\right) = \frac{4}{3}\left(v - \frac{14}{5}\right)$$

$$15) \frac{3}{2}\left(v + \frac{2}{3}\right) = -\frac{5}{2}\left(\frac{8}{5}v + \frac{7}{2}\right)$$

$$16) -2\left(r + \frac{31}{7}\right) = \frac{3}{8}\left(r - \frac{12}{7}\right) + \frac{10}{7}r$$

$$17) \frac{5}{2}\left(-\frac{10}{7}r + 1\right) = -1 - \frac{1}{4}\left(-\frac{2}{3}r - \frac{9}{4}\right)$$

$$18) -\frac{13}{6}\left(n - \frac{7}{4}\right) + \frac{23}{8}\left(\frac{7}{4}n - \frac{27}{8}\right) = \frac{5}{3}n + \frac{10}{3}n$$

Solve each equation. Remember that you can multiply both sides by anything, as long as that thing isn't zero.

$$19) \frac{x+4}{2x} = \frac{x-2}{3x} + \frac{1}{2x}$$

$$20) \frac{2}{5a} = \frac{1}{a} + \frac{1}{5a^2}$$

$$21) \frac{1}{3x} = \frac{1}{3} + \frac{2}{x}$$

$$22) \frac{2}{3m^2} - \frac{1}{3m} = \frac{1}{2m^2}$$

$$23) \frac{3b+1}{3b} + \frac{1}{b} = \frac{1}{3}$$

$$24) \frac{2n+6}{3n^2} = \frac{3n+5}{2n^2} - \frac{n-3}{6n^2}$$

Answers to Solving IM1-type equations with fractions

1) $\left\{\frac{3}{4}\right\}$

5) $\{1\}$

9) $\left\{\frac{9}{5}\right\}$

13) $\left\{\frac{13}{12}\right\}$

17) $\left\{\frac{987}{1256}\right\}$

21) $\{-5\}$

2) $\left\{\frac{4}{5}\right\}$

6) $\left\{\frac{7}{4}\right\}$

10) $\{2\}$

14) $\left\{\frac{11761}{3745}\right\}$

18) $\left\{-\frac{227}{82}\right\}$

22) $\left\{\frac{1}{2}\right\}$

3) No solution.

7) $\left\{\frac{4}{5}\right\}$

11) $\left\{\frac{5}{4}\right\}$

15) $\left\{-\frac{39}{22}\right\}$

19) $\{-13\}$

23) $\{-2\}$

4) $\left\{\frac{33}{8}\right\}$

8) $\left\{-\frac{8}{5}\right\}$

12) $\left\{-\frac{17}{6}\right\}$

16) $\left\{-\frac{460}{213}\right\}$

20) $\left\{-\frac{1}{3}\right\}$

24) $\left\{-\frac{3}{2}\right\}$