

ВАЖНО! Записвайте решенията както е показано в образца!

ТЕМА 3 УРАВНЕНИЯ

(1 – 6) Решете уравненията:

1. $-0,2x = 0,8$ Отг. -4

3. $2x - 13 = 10x + 3$ Отг. -2

5. $2\frac{1}{3}x + 3\frac{2}{3}x - 8x = 10$ Отг. -5

2. $\frac{x}{-3} = -2$ Отг. 6

4. $5,8x + 14 = 7,8x - 4$ Отг. 9

6. $\frac{x}{2} + \frac{x}{-3} + \frac{x}{-4} = 1$ Отг. -12

Образец:

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

$$\frac{\overset{2}{\cancel{x}}}{-2} + \frac{\overset{1}{\cancel{x}}}{4} - \frac{\overset{4}{\cancel{1}}}{1} = \frac{\overset{1}{\cancel{3x}}}{4} - \frac{\overset{4}{\cancel{2}}}{1}$$

$$\frac{-2x + x - 4}{4} = \frac{3x - 8}{4}$$

$$-2x + x - 4 = 3x - 8$$

$$-x - 4 = 3x - 8$$

$$-x - 3x = -8 + 4$$

$$-4x = -4 \quad | : (-4)$$

$$x = 1$$

(7 – 12) Решете уравненията:

7. $5(2x - 3) = 3(3x + 1)$ Отг. 18

9. $(2x - 3) \cdot 8 = (3x - 1) \cdot 6$ Отг. -9

11. $3\left(2x + \frac{1}{3}\right) = 2(4x + 1,5)$ Отг. -1

8. $5x - 2(x + 1) = 7$ Отг. 3

10. $2,1(2x - 1) = -1,5(-3x + 1)$ Отг. -2

12. $2(3x - 2,5) = 3\left(4x + 2\frac{1}{3}\right)$ Отг. -2

Образец:

$$3\left(2\frac{1}{3} + 2x\right) = 2(2x - 1)$$

$$3\left(\frac{7}{3} + 2x\right) = 4x - 2$$

$$3 \cdot \frac{7}{3} + 6x = 4x - 2$$

$$7 + 6x = 4x - 2$$

$$6x - 4x = -2 - 7$$

$$2x = -9 \quad | : 2$$

$$x = -\frac{9}{2}$$

$$x = -4,5 \text{ или } x = -4\frac{1}{2}$$

(13 – 20) Решете уравненията:

13. $\frac{x+2}{4} - \frac{x-1}{3} = 0$ Отг. 10

15. $\frac{2x+3}{3} = \frac{x+5}{2}$ Отг. 9

17. $\frac{3x-7,5}{2} = \frac{2x+1}{4}$ Отг. 4

19. $\frac{2x+9}{9} + 1 = -\frac{x}{3} + 1\frac{2}{9}$ Отг. -1,4

14. $\frac{2x+9}{9} = \frac{1+x}{2}$ Отг. 1,8

16. $\frac{3x+1,5}{3} = \frac{x-5}{2}$ Отг. -6

18. $\frac{2x-5}{3} = \frac{x+5}{6}$ Отг. 5

20. $x - \frac{x+6}{6} = 2\frac{1}{4}$ Отг. 3,9

Образец:

$$2x - \frac{x+4}{8} = x - \frac{1}{6}$$

$$\frac{24}{24}x - \frac{3}{8} - \frac{24}{24} \cdot \frac{x+4}{8} = \frac{24}{24}x - \frac{4}{6}$$

$$\frac{24x - x - 4}{8} = \frac{24x - 4}{6}$$

$$48x - 3(x+4) = 24x - 4$$

$$48x - 3x - 12 = 24x - 4$$

$$45x - 12 = 24x - 4$$

$$45x - 24x = -4 + 12$$

$$23x = 8 \quad | : 23$$

$$x = \frac{8}{23}$$

Допълнителни задачи за отличен

(21 – 40) Решете уравненията по дадения образец.

Образец 1:

$$8\left(x + \frac{7}{8}\right) - 9\left(x + \frac{2}{9}\right) = 4(x + 5,5) - 7(x + 3)$$

$$8x + 8 \cdot \frac{7}{8} - 9x - 9 \cdot \frac{2}{9} = 4x + 4 \cdot 5,5 - 7x - 7 \cdot 3$$

$$\underline{8x} + 7 - \underline{9x} - 2 = \underline{4x} + 22 - \underline{7x} - 21$$

Не прехвърляйте неизвестните, преди да сте опростили докрай двете страни на уравнението!

$$-x + 5 = -3x + 1 \quad // \text{Чак сега прехвърляме!}$$

$$-x + 3x = 1 - 5$$

$$2x = -4 \quad |:2$$

$$x = -\frac{4}{2}$$

$$x = -2$$

Образец 2:

$$\frac{3x + 5}{-8} - \frac{2x + 3}{-4} = \frac{3x - 7}{2} + \frac{x - 9}{-8}$$

$$\underbrace{-\frac{\overbrace{3x+5}}{8} + \frac{\overbrace{2x+3}}{4}}_8 = \frac{\overbrace{3x-7}}{2} - \frac{\overbrace{x-9}}{8}$$

$$-(3x + 5) + 2(2x + 3) = 4(3x - 7) - (x - 9) \quad // \text{СКОБИТЕ СА ЗАДЪЛЖИТЕЛНИ!!!}$$

$$-\underline{3x} - 5 + \underline{4x} + 6 = \underline{12x} - 28 - \underline{x} + 9$$

$$x + 1 = 11x - 19$$

$$x - 11x = -19 - 1$$

$$-10x = -20 \quad |:(-10)$$

$$x = \frac{-20}{-10}$$

$$x = 2$$

(21 – 40) Решете уравненията по дадения образец.

21. $5(x - 2) - 3(x + 4) = 8(x + 3) - 2(x + 2)$ Отг. -10,5
22. $4(2x - 5) - 3(x + 6) = 8(x - 2) - 4(x + 3)$ Отг. 10
23. $7(2x - 3) - 3(4x - 2) = 5(x + 3) - 2(x + 8)$ Отг. -14
24. $3(2x + 5) - 2(x + 4) = 4(x + 8) - 2(x + 3)$ Отг. 9,5
25. $4(3x - 2) - 2(2x + 3) = 5(x + 1,4) - 2(x + 5,5)$ Отг. 2
26. $7(x - 2) - 3\left(x + \frac{2}{3}\right) = 6(x - 1,5) - 4(x + 1,5)$ Отг. 0,5
27. $4(2x - 3) - 3\left(x + \frac{1}{3}\right) = 5(x - 2) - 3(x + 5)$ Отг. -4
28. $7\left(2x - \frac{3}{7}\right) - 5(x - 1,2) = 4(x + 3) - 5(2x + 1,4)$ Отг. $\frac{2}{15}$
29. $8(x + 2) - 3(x + 4) = 5(x + 6) - 7(x + 3)$ Отг. $\frac{5}{7}$
30. $6\left(x - \frac{5}{6}\right) - 3\left(x + \frac{2}{3}\right) = 8(x + 3) - 10(x + 3,7)$ Отг. -1,2
31. $8\left(x - \frac{3}{8}\right) - 5(x + 1,4) = 2(x + 3,5) - 4(x + 0,25)$ Отг. 3,2
32. $7\left(x + \frac{3}{7}\right) - 5(x + 1,6) = 8(x + 2) - 3(x + 4)$ Отг. -3
33. $4(x + 2,5) - 3\left(2x + \frac{1}{3}\right) = 5(x + 4) - 2(x + 1,5)$ Отг. -1,6
34. $8\left(x + \frac{3}{8}\right) - 5\left(x + \frac{2}{5}\right) = 5(x - 1,2) - 4(x + 1,25)$ Отг. -6
35. $9\left(x - \frac{7}{9}\right) - 6(x + 1,5) = 4(2x - 3) - 3(x + 5)$ Отг. 5,5
36. $\frac{2x - 5}{3} - \frac{3x - 1}{2} = 1 - \frac{2x + 3}{3}$ Отг. -7
37. $\frac{3x + 1}{2} - \frac{x + 5}{8} = 2 - \frac{x + 3}{4}$ Отг. $\frac{11}{13}$
38. $\frac{2x - 1}{3} - \frac{x + 5}{6} = \frac{3x - 1}{2} - \frac{2x + 9}{12}$ Отг. 0,1
39. $\frac{3x - 1}{5} - \frac{2x + 7}{-2} = \frac{7x + 1}{10} - \frac{3x + 4}{-2}$ Отг. 2
40. $\frac{3x + 7}{-2} - \frac{4x - 1}{3} = \frac{5x - 1}{-6} - \frac{3x - 2}{-4}$ Отг. $-1\frac{1}{33}$