CHALLENGING FIRST ORDER EQUATIONS QUESTIONS

CANSU OLCE

A STAR MATHS (www.astarmaths.com.au)

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

Find x.

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

Find x.

3. $\frac{x - 3}{2} - \frac{x - 1}{3} = 1$

Find x.

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

Find x.

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

Find x.

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

Find x.

7. $\frac{3}{4}(x + 1) = \frac{5}{3}(x + 1)$

Find x.

8. $\frac{x - 3}{2} - \frac{x - 2}{3} = \frac{2}{3}$

Find x.

9. $2 + \frac{4}{3 - \frac{2}{x - 3}} = 3$

Find x.

10. $\frac{0.\overline{3}x}{x + 1.\overline{3}} = \frac{1}{2}$

Find x.

11. $\frac{3}{3 - x} = \frac{1}{x - 3} - x + 3$

Find x.

12. $5 - \frac{3}{1 + \frac{2}{2x + 5}} = 4$

Find x.

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

Find x.

14. $\frac{a+b}{x+1}=\frac{a-b}{x}$

Find x in terms of a and b.

15. $\frac{2x+5}{x+3}+\frac{2}{x+7}=2-\frac{x+4}{x+3}$

Find x.

16. $\frac{2x-1}{2x+1}=\frac{x+1}{x-1}$

Find x.

17. $(\sqrt{3}+2)(x-2)=(\sqrt{3}-2)(2-x)$

Find x.

18. $a+b=12$

$a-b=4$

Find b.

19. $(x-y)^2+(x-1)^2=0$

Find x+y.

20. $\frac{x}{y}=\frac{3}{5}$

$x+y=48$

$y-x=?$

21. $x+2y=16$

$3x-y=6$

Find x and y.

22. $x^2-y^2=12$

$x+y=6$

Find $x\times y$.

23. $5a+2b=8$

$2a+3b=4$

Find $\frac{a}{b}$.

24. $\frac{6}{x}+\frac{5}{y}=13$

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

$2x+y=?$

25. $x-\frac{1}{y}=2$

$y-\frac{1}{x}=3$

$\frac{x}{y}=?$

26. $a^3b^2=50$

$ab=5$

$a=?$

27. $\frac{a}{a-b}=5$

$4a+3b=16$

$2a+6b=?$

28. x and y are positive integer.

$\frac{1}{x-y+4}+\frac{1}{2x+y-18}=1$

Find x.

29. $(a-b+2)^2+a^2+4=4a$

Find $a+b$.

30. $x(5x-8)+y(y+2x)=-4$

$y=?$

31. $x=\frac{a}{2a+b}$

$y=\frac{b}{2a+b}$

Find y in terms of x.

32. $a-b+3c=4$

$3a+b+5c=12$

$a+b+c=?$

33. $x - 2y = 3 + z$

$3x + 4y = 5 - z$

$2x + y =?$

34. $3x + 2y = 6$

$2x + z = 4$

z/y=?

35. $a \cdot b = 8$

$a \cdot b^2 = 32$

$a^2 \cdot c = 20$

$a + b + c =?$

36. $\frac{xy}{x+y} = \frac{1}{3}$

$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} =?$

37. $\frac{1}{x} + \frac{1}{y} = 4$

$\frac{1}{y} + \frac{1}{z} = 3$

$\frac{1}{x} + \frac{1}{z} = 5$

$\frac{1}{x} - \frac{1}{y} + \frac{1}{z} =?$

38. $a + b = c$

$a + c = b$

$b + c = a$

$a + b + c =?$

39. $2x + y + z = 3$

$x + 2y + z = 2$

$5x + 3y + z = 3$

x =?

40. $x^2 - y^2 = 7$

$y^2 - z^2 = 4$

$x + z = 11$

$x =?$

41. $a + b = 2$

$a + c = 5$

$2c + b = 9$

$b - a - 5c = ?$

42. a, b, c are positive integers.

$a \cdot b = 6$

$b \cdot c = 10$

$a \cdot c = 15$

$\frac{b+c}{a-b} = ?$

ANSWER KEY

1. 2
2. -3
3. 13
4. $\emptyset$
5. $\mathbb{R}$
6. {-4}
7. -1
8. 1
9. 1
10. -4
11. 6
12. -2
13. $\emptyset$
14. $\frac{a-b}{2b}$
15. -9
16. 0
17. 2
18. 4
19. 2
20. 12
21. {(4, 6)}
22. 8
23. 4
24. 3
25. 2/3
26. 2
27. 17
28. 6
29. 6
30. -1
31. 1-2x
32. 4
33. 4
34. 4/3
35. 11

36. ½

37. 4

38. 0

39. 1

40. 6

41. -20

42. 7