

A. Aşağıdaki denklemleri çözünüz.

1. $(3-x)(x^2+4)=0$

2. $-2x^2(x-2)^2=0$

3. $(x+3)^2(x^2-4)=0$

4. $(x-1)^5+(1-x)^3=0$

5. $\frac{x+7}{x-5} + \frac{3x+1}{2} = 0$

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

7. $x^3+2x^2-4x-8=0$

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

9. $x^4+5x^2+4=0$

10. $x^4-x^2-12=0$

11. $(x^2-2x)^2-3(x^2-2x)=0$

12. $(x^2+2)^2-4x^2=5$

13. $x^6-7x^3-8=0$

14. $(x^2-2x)^2-2x^2+4x-3=0$

15. $\left(2x-\frac{1}{x}\right)^2=1$

16. $\frac{x^2-6}{x} - \frac{5x}{x^2-6} = 4$

17. $4^{\frac{1}{x}} - 3 \cdot 2^{\frac{1}{x}} + 2 = 0$

18. $3^x - \frac{1}{3^{x-2}} - 8 = 0$

19. $2^{2+x} + 2^{1-x} - 9 = 0$

20. $3 \cdot \left(\frac{3}{2}\right)^x - 6 \cdot \left(\frac{2}{3}\right)^x + 7 = 0$

21. $3 \cdot 4^x - 5 \cdot 6^x + 2 \cdot 9^x = 0$

22. $\sqrt{x+6} = x$

23. $\sqrt{5x-6} = x$

24. $\sqrt{x^2-5} = x+1$

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

26. $\sqrt{x^2+2x} + x = 2$

27. $\sqrt{5-x} - \sqrt{x} = 1$

28. $\sqrt{x^2-4} - 2x = 4$

29. $x^2-2x+4=3\sqrt{2x-x^2}$

30. $\sqrt{x^2-5} = x^2-7$

31. $\sqrt{x+1} \cdot \sqrt{x^2-8} = 2x+2$

32. $\sqrt{2x+1} + \sqrt{x} = \sqrt{5x+5}$

33. $\sqrt{x+2\sqrt{x}} - \sqrt{x-2\sqrt{x}} = \sqrt{6}$

34. $\sqrt{3x+2} + \sqrt{2x-2} = 3\sqrt{x}$

35. $\sqrt{x^2+2x-3} = (x-1) \cdot \sqrt{x+1}$

36. $1-x = \sqrt{\frac{x}{2}}$

37. $\sqrt{x} - \frac{3}{\sqrt{x}} = 2$

38. $x^2-3x-2 = \sqrt{2x^2-6x-4}$

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

40. $x^2-2(m-1)x+m^2-2m=0$

41. $ax^2-(ab+1)x+b=0$

42. $(1-2x)^2 = (4x-2)(3x+2)$

43. $x^2-2ax+a^2-b^2=0$

44. $ax^2-(a^2+2)x+2a=0$

45. $(a^2-b^2)x^2-2(a^2+b^2)x+a^2-b^2=0$

46. $abx^2 - (a^2b + ab^2 + 1)x + a + b = 0$

47. $a^2x^2 - (a^2 + 2b^2)x + 2b^2 = 0$

48. $(a^2 - b^2)x^2 - (a^2 + 3ab - 2b^2)x + 2ab = 0$

49. $(x^2 - 3x - 2)^2 = (x^2 + x - 10)^2$

B. Aşağıdaki eşitsizlikleri ve eşitsizlik sistemlerini çözünüz.

1. $3 - 5x \leq 2x + 3$

2. $\frac{2x+3}{2} \geq \frac{3x-5}{3}$

3. $x+2 < \frac{2x-3}{2}$

4. $2x^2 - 3x - 5 < 0$

5. $6 - 7x - 3x^2 \leq 0$

6. $\frac{3-2x}{x-4} \geq 0$

7. $\frac{x}{4-3x-x^2} \leq 0$

8. $\frac{x^2-x-12}{x^2-x+6} < 0$

9. $\frac{x^2+6x+9}{x^2+x-12} < 0$

10. $(x-1)(x-2)(x-3)^2 \leq 0$

11. $x^4 + 5x^2 + 4 \leq 0$

12. $x^4 + 3x^2 - 4 \leq 0$

13. $x^4 - 10x^2 + 9 < 0$

14. $\frac{3}{1-x} \geq 1$

15. $\frac{x-4}{x+4} \leq 1$

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

17. $\frac{5x-2}{x+2} < 2$

18. $\frac{x^2+3x-10}{x^2-x-6} \leq 0$

19. $\frac{3x+2}{(x+2)^2} < \frac{1}{2}$

20. $\frac{2}{x+2} \leq \frac{1}{x}$

21. $\frac{4}{x-1} + \frac{5}{x+2} \geq 3$

22. $-2x^3(x^2-4)(3+x) \geq 0$

23. $(x^2-x+2)(x-2)^2(4-x) \leq 0$

24. $(x^2-x-2)^3(x+2)^5 \leq 0$

25. $\frac{x^3}{(x^2-1)^2(x^2+1)} \leq 0$

26. $(x^2+3x-2)^2 < (x^2+2x+2)^2$

27. $\frac{(x^2-x-2)(4-x^2)}{(x^2+5x+4)(x^2+4)} \geq 0$

28. $\frac{5x+5}{x^2-4} \leq \frac{8}{x-1}$

29. $\frac{1}{x-1} + \frac{2}{x+2} \geq \frac{3}{x}$

30. $(x^2+2x)(x^2+2x-2) \leq 3$

31. $\left. \begin{array}{l} 2x^2 - 3x + 1 > 0 \\ x^2 - 3x + 2 \leq 0 \end{array} \right\}$

32. $\left. \begin{array}{l} \frac{x-4}{3} \leq \frac{4}{x} \\ \frac{1}{x} < x \end{array} \right\}$

33. $\left. \begin{array}{l} x^2 - x - 2 \geq 0 \\ 0 < x^2 + 5x \leq 6 \end{array} \right\}$

$$34. \left. \begin{array}{l} \frac{1}{x+1} < 2 \\ \frac{x-1}{x+1} > 1 \\ x^2 - 4 \leq 0 \end{array} \right\}$$

$$35. \left. \begin{array}{l} (2x+1)^2 > 4(x-1)^2 \\ (2x-1)^2 \leq (3x+1)^2 \end{array} \right\}$$

$$36. \left. \begin{array}{l} (2x^2 - x - 1)^2 \geq (x^2 + x - 2)^2 \\ (x^2 + 2x - 1)^2 < (x^2 + 3x + 4)^2 \end{array} \right\}$$

C. Aşağıdaki denklem ve eşitsizliklerin çözüm kümelerini bulunuz.

$$1. |3x - 5| = -1$$

$$2. |7 - x| \geq -5$$

$$3. |2x - 3| = 5$$

$$4. |3x - 1| \leq 8$$

$$5. |5 - 2x| < 3$$

$$6. |5x + 4| > 6$$

$$7. |x - 2| + 2x + 4 = 0$$

$$8. |x^2 - 3x - 2| = 2$$

$$9. |x^2 - 1| \leq 8$$

$$10. |x - 3| = |x| + 1$$

$$11. |x - 2| - |x| = 4$$

$$12. |x - 2| = |x| + 2$$

$$13. |x - 3| = |x| - 1$$

$$14. 1 < |3x - 2| \leq 4$$

$$15. x^2 - |x - 2| - 4 = 0$$

$$16. x^2 - 3|x| - 4 \leq 0$$

$$17. |x^2 + 2x| = x^2 - 4$$

$$18. |x^2 - 4| - 2|x + 2| = 0$$

$$19. \frac{x^2 - x - 6}{|x| + 2} \leq 0$$

$$20. \frac{x^2 + 2x - 3}{|x + 1|} \leq 0$$

$$21. \left| \frac{x}{x + 2} \right| \leq 1$$

$$22. \left| \frac{2x - 3}{x + 1} \right| > 2$$

$$23. \left| \frac{3x}{x^2 + 2} \right| \geq 1$$

$$24. \frac{|2 - x|}{x + 2} \geq 1$$

$$25. \frac{|x| + 2}{|x - 2|} \geq 2$$

$$26. \frac{|x - 1| + 2x}{x} < 3$$

$$27. \left| \frac{x}{x^2 - 2} \right| \geq 1$$

$$28. \frac{x^2 + 2|x| - 3}{x + 1} \geq 2x$$

$$29. \frac{|x + 2|}{x^2 - x - 6} \geq \frac{1}{2}$$

$$30. \frac{x^2 - |x| - 2}{9 - x^2} \geq 0$$

$$31. |2x - |x - 4|| \leq x$$

D. Aşağıdaki denklem ve denklem sistemlerini çözünüz.

$$1. \left. \begin{array}{l} 2x + y = 1 \\ 3x - 2y = -9 \end{array} \right\}$$

$$2. \left. \begin{array}{l} 3 - 2x = 0 \\ x - 3y = 1 \end{array} \right\}$$

$$3. \begin{cases} 2x + y = -1 \\ x \cdot y = -1 \end{cases}$$

$$4. \begin{cases} x^2 + x \cdot y + y^2 = 1 \\ x - 2y = 3 \end{cases}$$

$$5. \begin{cases} x^2 + y^2 = 20 \\ x^2 - y^2 = 12 \end{cases}$$

$$6. \begin{cases} 2x^2 + y^2 = 19 \\ x^2 + 2y^2 = 11 \end{cases}$$

$$7. \begin{cases} y = x^2 \\ y = 2x - 1 \end{cases}$$

$$8. \begin{cases} y = x^2 \\ y = x - 2 \end{cases}$$

$$9. x - y = 3$$

$$10. xy - 2x = 0$$

$$11. \begin{cases} x^2 - 2xy = 1 \\ -2x^2 + 4xy = 2 \end{cases}$$

$$12. \begin{cases} \frac{x}{x+y} + y = 1 \\ \frac{y}{x+y} = -1 \end{cases}$$

$$13. \begin{cases} \frac{1}{x} - \frac{2}{y} = -\frac{5}{2} \\ \frac{2}{x} + \frac{3}{y} = 2 \end{cases}$$

$$14. \begin{cases} x + y = -1 \\ x \cdot y = -2 \end{cases}$$

$$15. \begin{cases} x^2 - y^2 = 5 \\ x + y = -1 \end{cases}$$

$$16. \begin{cases} \frac{x}{y} + \frac{y}{x} = -\frac{10}{3} \\ x + y = 6 \end{cases}$$

$$17. \begin{cases} x^2 + y^2 = 5 \\ x \cdot y = 6 \end{cases}$$

$$18. \begin{cases} \frac{1}{x} + \frac{2}{y} = \frac{1}{2} \\ \frac{1}{x^2} - \frac{4}{y^2} = \frac{3}{4} \end{cases}$$

$$19. \begin{cases} x^2 + y^2 = 5 \\ x \cdot y = -2 \end{cases}$$

$$20. \begin{cases} x^2 + y^2 - 2x - 4 = 0 \\ y^2 + x - 4 = 0 \end{cases}$$

$$21. \begin{cases} 2xy - \frac{x}{y} = 2 \\ xy + \frac{3x}{y} = 8 \end{cases}$$

$$22. \begin{cases} xy + \frac{y}{x} = 4 \\ xy - \frac{x}{y} = \frac{3}{2} \end{cases}$$

$$23. \begin{cases} y \cdot (2x + y) = y \\ 4x^2 - y^2 = 4 \end{cases}$$

$$24. \begin{cases} x^2 + xy = 3 \\ y^2 + xy = 6 \end{cases}$$

$$25. \begin{cases} x^2 + xy = 2 \\ x^2 - y^2 = 3 \end{cases}$$

$$26. \begin{cases} x + y + xy = 7 \\ x^2 + y^2 - xy = 7 \end{cases}$$

$$27. \begin{cases} x^2 + y^2 = 9 - 2xy \\ y \cdot (x + y) = 6 \end{cases}$$

$$28. \begin{cases} x^2 + y^2 = 17 \\ x + y = 3 \end{cases}$$

$$29. \begin{cases} x^2 - 2xy = 0 \\ y^2 - 2y + 2x - 3 = 0 \end{cases}$$

$$30. \begin{cases} (x-2)(x+y) = 0 \\ y^2 - x^2 = 5 \end{cases}$$

$$31. \begin{cases} x^2 - 2x + y = 5 \\ x^2 - |y+1| = -2 \end{cases}$$

A.

1. $\zeta = \{3\}$
2. $\zeta = \{0,2\}$
3. $\zeta = \{-3,-2,2\}$
4. $\zeta = \{0,1,2\}$
5. $\zeta = \{1,3\}$
6. $\zeta = \{0\}$
7. $\zeta = \{-2,2\}$
8. $\zeta = \{-3,1,2\}$
9. $\zeta = \emptyset$
10. $\zeta = \{-2,2\}$
11. $\zeta = \{-1,0,2,3\}$
12. $\zeta = \{-1,1\}$
13. $\zeta = \{-1,2\}$
14. $\zeta = \{-1,1,3\}$
15. $\zeta = \left\{-1, -\frac{1}{2}, \frac{1}{2}, 1\right\}$
16. $\zeta = \{-3,-1,2,6\}$
17. $\zeta = \{1\}$
18. $\zeta = \{2\}$
19. $\zeta = \{-2,1\}$
20. $\zeta = \{-1\}$
21. $\zeta = \{0,1\}$
22. $\zeta = \{3\}$
23. $\zeta = \{2,3\}$
24. $\zeta = \emptyset$
25. $\zeta = \emptyset$
26. $\zeta = \left\{\frac{2}{3}\right\}$
27. $\zeta = \{1\}$
28. $\zeta = \{-2\}$
29. $\zeta = \{1\}$
30. $\zeta = \{-3,3\}$
31. $\zeta = \{6\}$
32. $\zeta = \{4\}$
33. $\zeta = \{9/2\}$
34. $\zeta = \{2\}$
35. $\zeta = \left\{1, \frac{1+\sqrt{17}}{2}\right\}$
36. $\zeta = \left\{\frac{1}{2}\right\}$
37. $\zeta = \{9\}$
38. $\zeta = \left\{-1, \frac{3-\sqrt{17}}{2}, \frac{3+\sqrt{17}}{2}, 4\right\}$
39. $\zeta = \{-4/3\}$
40. $\zeta = \{m, m-2\}$
41. $\zeta = \left\{\frac{1}{a}, b\right\}$
42. $\zeta = \left\{\frac{-5}{4}, \frac{1}{2}\right\}$
43. $\zeta = \{a-b, a+b\}$
44. $\zeta = \left\{a, \frac{2}{a}\right\}$
45. $\zeta = \left\{\frac{(a-b)}{(a+b)}, \frac{(a+b)}{(a-b)}\right\}$

46. $\zeta = \left\{ a+b, \frac{1}{ab} \right\}$

47. $\zeta = \left\{ 1, \frac{2b^2}{a^2} \right\}$

48. $\zeta = \left\{ \frac{a}{a-b}, \frac{2b}{a+b} \right\}$

49. $\zeta = \{-2, 2, 3\}$

B.

1. $\zeta = \{x : x \geq 0, x \in \mathbb{R}\}$

2. $\zeta = \{x : x \in \mathbb{R}\}$

3. $\zeta = \emptyset$

4. $\zeta = \left\{ x : -1 < x < \frac{5}{2}, x \in \mathbb{R} \right\}$

5. $\zeta = \left\{ x : (x \leq -3) \vee (x \geq \frac{2}{3}), x \in \mathbb{R} \right\}$

6. $\zeta = \left\{ x : \frac{3}{2} \leq x < 4, x \in \mathbb{R} \right\}$

7. $\zeta = \{x : (-4 < x \leq 0) \vee (x > 1), x \in \mathbb{R}\}$

8. $\zeta = \{x : -3 < x < 4, x \in \mathbb{R}\}$

9. $\zeta = \{x : (-4 < x < -3) \vee (-3 < x < 3), x \in \mathbb{R}\}$

10. $\zeta = \{x : (1 \leq x \leq 2) \vee (x = 3), x \in \mathbb{R}\}$

11. $\zeta = \emptyset$

12. $\zeta = \{x : -1 \leq x \leq 1, x \in \mathbb{R}\}$

13. $\zeta = \{x : (-3 < x < -1) \vee (1 < x < 3), x \in \mathbb{R}\}$

14. $\zeta = \{x : -2 \leq x < 1, x \in \mathbb{R}\}$

15. $\zeta = \{x : x > -4, x \in \mathbb{R}\}$

16. $\zeta = \{x : (x < -2) \vee (x \geq 0), x \in \mathbb{R}\}$

17. $\zeta = \{x : -2 < x < 2, x \in \mathbb{R}\}$

18. $\zeta = \{x : (-5 \leq x < -2) \vee (2 \leq x < 3), x \in \mathbb{R}\}$

19. $\zeta = \{x : (x < -2) \vee (-2 < x < 0) \vee (x > 2), x \in \mathbb{R}\}$

20. $\zeta = \{x : (x < -2) \vee (0 < x \leq 2), x \in \mathbb{R}\}$

21. $\zeta = \{x : (-2 < x \leq -1) \vee (1 < x \leq 3), x \in \mathbb{R}\}$

22. $\zeta = \{x : (-3 \leq x \leq -2) \vee (0 \leq x \leq 2), x \in \mathbb{R}\}$

23. $\zeta = \{x : (x = 2) \vee (x \geq 4), x \in \mathbb{R}\}$

24. $\zeta = \{x : (x \leq -2) \vee (-1 \leq x \leq 2), x \in \mathbb{R}\}$

25. $\zeta = \{x : (x \leq 0) \wedge (x \neq -1), x \in \mathbb{R}\}$

26. $\zeta = \left\{ x : (x < -\frac{5}{2}) \vee (0 < x < 4), x \in \mathbb{R} \right\}$

27. $\zeta = \{x : (-4 < x \leq -2) \vee (x = 2), x \in \mathbb{R}\}$

28. $\zeta = \{x : (-3 \leq x < -2) \vee (1 < x < 2) \vee (x \geq 3), x \in \mathbb{R}\}$

29. $\zeta = \{x : (-2 < x < 0) \vee (1 < x \leq 2), x \in \mathbb{R}\}$

30. $\zeta = \{x : -3 \leq x \leq 1, x \in \mathbb{R}\}$

31. $\zeta = \{x : 1 < x \leq 2, x \in \mathbb{R}\}$

32. $\zeta = \{x : 1 < x \leq 6, x \in \mathbb{R}\}$

33. $\zeta = \{x : -6 \leq x < -5, x \in \mathbb{R}\}$

34. $\zeta = \{x : -2 \leq x < -1, x \in \mathbb{R}\}$

35. $\zeta = \left\{ x : x > \frac{1}{4}, x \in \mathbb{R} \right\}$

36. $\zeta = \left\{ x : (-5 < x < -\frac{3}{2}) \vee (x \geq 1), x \in \mathbb{R} \right\}$

C.

1. $\zeta = \emptyset$

2. $\zeta = \mathbb{R}$

3. $\zeta = \{-1, 4\}$

4. $\zeta = \left\{ x : -\frac{7}{3} \leq x \leq 3, x \in \mathbb{R} \right\}$

5. $\zeta = \{ x : 1 < x < 4, x \in \mathbb{R} \}$

6. $\zeta = \left\{ x : (x < -2) \vee \left(x > \frac{2}{5} \right), x \in \mathbb{R} \right\}$

7. $\zeta = \{-6\}$

8. $\zeta = \{-1, 0, 3, 4\}$

9. $\zeta = \{ x : -3 \leq x \leq 3, x \in \mathbb{R} \}$

10. $\zeta = \{1\}$

11. $\zeta = \emptyset$

12. $\zeta = \{ x : x \leq 0, x \in \mathbb{R} \}$

13. $\zeta = \{2\}$

14. $\zeta = \left\{ x : \left(-\frac{2}{3} \leq x < \frac{1}{3} \right) \vee (1 < x \leq 2), x \in \mathbb{R} \right\}$

15. $\zeta = \{-3, 2\}$

16. $\zeta = \{ x : -4 \leq x \leq 4, x \in \mathbb{R} \}$

17. $\zeta = \{-2\}$

18. $\zeta = \{-2, 0, 4\}$

19. $\zeta = \{ x : -2 \leq x \leq 3, x \in \mathbb{R} \}$

20. $\zeta = [-3, 1] - \{-1\}$

21. $\zeta = \{ x : x \geq -1, x \in \mathbb{R} \}$

22. $\zeta = \left\{ x : \left(x < \frac{1}{4} \right) \wedge (x \neq -1); x \in \mathbb{R} \right\}$

23. $\zeta = [-2, -1] \cup [1, 2]$

24. $\zeta = (-2, 0]$

25. $\zeta = \left\{ x : \left(\frac{2}{3} \leq x \leq 6 \right) \vee x \neq 2, x \in \mathbb{R} \right\}$

26. $\zeta = \mathbb{R} - \left[0, \frac{1}{2} \right]$

27. $\zeta = \{ x : (-2 \leq x \leq -1 \text{ veya } 1 \leq x \leq 2) \vee x \neq \pm\sqrt{2}, x \in \mathbb{R} \}$

28. $\zeta = \{ x : x \leq -3, x \in \mathbb{R} \}$

29. $\zeta = \{ x : 3 < x \leq 5, x \in \mathbb{R} \}$

30. $\zeta = \{ x : (-3 < x \leq -2) \vee (2 \leq x < 3), x \in \mathbb{R} \}$

31. $\zeta = \{ x : 1 \leq x \leq 2, x \in \mathbb{R} \}$

D.

1. $\zeta = \{(-1, 3)\}$

2. $\zeta = \left\{ \left(\frac{3}{2}, \frac{1}{6} \right) \right\}$

3. $\zeta = \left\{ (-1, 1), \left(\frac{1}{2}, -2 \right) \right\}$

4. $\zeta = \left\{ (1, -1), \left(\frac{5}{7}, -\frac{8}{7} \right) \right\}$

5. $\zeta = \{(-4, -2), (-4, 2), (4, -2), (4, 2)\}$

6. $\zeta = \{(-3, -1), (-3, 1), (3, -1), (3, 1)\}$

7. $\zeta = \{(1, 1)\}$

8. $\zeta = \emptyset$

9. $\zeta = \{(x, y) \mid y = x - 3, x \in \mathbb{R}\}$

10. $\zeta = \{(x, y) \mid x = 0 \text{ veya } y = 2\}$

11. $\zeta = \emptyset$

12. $\zeta = \{(2, -1)\}$

13. $\zeta = \{(-2, 1)\}$

14. $\zeta = \{(-2, 1), (1, -2)\}$

15. $\zeta = \{(-3, 2)\}$

16. $\zeta = \{(-3,9), (9,-3)\}$

17. $\zeta = \{(-3,-2), (3,2)\}$

18. $\zeta = \{(-2,2)\}$

19. $\zeta = \{(-2,1), (-1,2)\}$

20. $\zeta = \{(0,-2), (0,2), (3,-1), (3,1)\}$

21. $\zeta = \{(-2,-1), (2,1)\}$

22. $\zeta = \left\{ \left(-\sqrt{7}, -\frac{\sqrt{7}}{2} \right), \left(\sqrt{7}, \frac{\sqrt{7}}{2} \right), (-1,-2), (1,2) \right\}$

23. $\zeta = \left\{ (-1,0), (1,0), \left(\frac{5}{4}, -\frac{3}{2} \right) \right\}$

24. $\zeta = \{(-1,-2), (1,2)\}$

25. $\zeta = \{(-2,1), (2,-1)\}$

26. $\zeta = \{(1,3), (3,1)\}$

27. $\zeta = \{(-1,-2), (1,2)\}$

28. $\zeta = \{(-1,4), (4,-1)\}$

29. $\zeta = \{(0,-1), (0,3), (-2,-1), (6,3)\}$

30. $\zeta = \{(2,-3), (2,3)\}$

31. $\zeta = \{(-4,-19), (-1,2), (2,5)\}$