1. $21 + \sqrt{2x-7} = x$

(28)

$\sqrt{2x-7} = x - 21 \quad /^2$

$2x - 7 = x^2 - 42x + 441$

$0 = x^2 - 44x + 448$

$0 = (x-28)(x-16)$

$x_1 = 28$

~~$x_2 = 16$~~

Ll: $x = 16$

$L = 21 + \sqrt{32-7} = 21 + 5 = 26$

$P = 16$ $\quad L \neq P$

$x = 28$

$L = 21 + \sqrt{49} = 21 + 7 = 28$

$P = 28$

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

(5)

$\sqrt{x-1} = x - 3$

$x - 1 = x^2 - 6x + 9$

$0 = x^2 - 7x + 10$

$0 = (x-5)(x-2)$

$x_1 = 5$

~~$x_2 = 2$~~

Ll: $x = 5$

$L = 3 + \sqrt{5-1} = 3 + 2 = 5$

$P = 5$ $\quad L = P$

$x = 2$

$L = 3 + \sqrt{2-1} = 3 + 1 = 4$

$P = 2$ $\quad L \neq P$

3. $\sqrt{2(x-3)} = 3-x \quad /^2$ (3)

$2(x-3) = 9-6x+x^2$

$2x-6 = 9-6x+x^2$

$x^2-8x+15 = 0$

$(x-3)(x-5) = 0$

$x_1 = 3$

$x_2 = 5$

Kk: $x=3$

$L = \sqrt{2(3-3)} = 0$

$P = 3-3 = 0$

$L = P$

$x=5$

$L = \sqrt{2(5-3)} = 2$

$P = 3-5 = -2$

$L \neq P$

4. $\sqrt{5-x^2} = x-1 \quad /^2$ (2)

$5-x^2 = x^2-2x+1$

$0 = 2x^2-2x-4$

$0 = x^2-x-2$

$0 = (x-2)(x+1)$

$x_1 = 2 \quad x_2 = -1$

Kk: $x=2$

$L = \sqrt{5-4} = 1$

$P = 2-1 = 1$

$L = P$

$x=-1$

$L = \sqrt{5-1} = 2$

$P = -1-1 = -2$

$L \neq P$

5. $\sqrt{x^2+8} = 2x+1 \quad /^2$ (1)

$x^2+8 = 4x^2+4x+1$

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

$D = 16+$

6. $\sqrt{37-x^2}+5=x$ (6)

$\sqrt{37-x^2} = x-5 \mid^2$

$37-x^2 = x^2-10x+25$

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

$0 = x^2-5x-6$

$0 = (x-6)(x+1)$

$x_1 = 6$

$x_2 = -1$

Ell: $x_1 = 6$

$L = \sqrt{37-36}+5 = 6$

$P = 6$ $L = P$

$x_2 = -1$

$L = \sqrt{37-1}+5 = 6+5 = 11$

$P = -1$ $L \neq P$

7. $\sqrt{2x^2+6x+1} = x+2 \mid^2$ (1)

$2x^2+6x+1 = x^2+4x+4$

$x^2+2x-3 = 0$

$(x+3)(x-1) = 0$

$x_1 = -3$

$x_2 = 1$

Ell: $x_1 = -3$

$L = \sqrt{2\cdot 9-18+1} = 1$

$P = -3+2 = -1$ $L \neq P$

$x_2 = 1$

$L = \sqrt{2+6+1} = 3$

$P = 1+2 = 3$ $L = P$

8. $\sqrt{2x+5}+\sqrt{x+2} = 1$ (-2)

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

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

$x+2 = -2\sqrt{x+2} \mid^2$

$x^2+4x+4 = 4(x+2)$

$x^2+4x+4 = 4x+8$

$x^2-4 = 0$

$(x+2)(x-2) = 0$

$x_1 = 2$ $x_2 = -2$

Ell:

$x_1 = 2$

$L = \sqrt{4+5}+\sqrt{4} = 3+2 = 5$

$P = 1$

$L \neq P$

$x_2 = -2$

$L = \sqrt{-4+5}+\sqrt{-2+2} = 1$

$P = 1$ $L = P$

9. $\sqrt{15-x}+\sqrt{3-x}=6$ (-1)

$\sqrt{15-x} = 6-\sqrt{3-x}$

$15-x = 36-12\sqrt{3-x}+3-x$

$12\sqrt{3-x} = 24$

$\sqrt{3-x} = 2$

$3-x = 4$

$-1 = x$

Zk.: $L = \sqrt{15+1}+\sqrt{3+1} = 4+2 = 6$

$P = 6$

$L = P$

10. $\sqrt{x+5}-\sqrt{x-3}=2$ (4)

$\sqrt{x+5} = 2+\sqrt{x-3} \quad /^2$

$x+5 = 4+4\sqrt{x-3}+x-3$

$4 = 4\sqrt{x-3}$

$1 = \sqrt{x-3}$

$1 = x-3$

$x = 4$

Zk.: $L = \sqrt{4+5}-\sqrt{4-3} = 3-1 = 2$

$P = 2$

$L = P$

11. $2\sqrt{x-1}+\sqrt{x+3}=2$ (1)

$2\sqrt{x-1} = 2-\sqrt{x+3}$

$4(x-1) = 4-4\sqrt{x+3}+x+3$

$4x-4 = 4-4\sqrt{x+3}+x+3$

$3x-11 = -4\sqrt{x+3}$

$4\sqrt{x+3} = 11-3x \quad /^2$

$16(x+3) = 121-66x+9x^2$

$0 = 9x^2-82x+73$

$D = (-82)^2-4\cdot 9\cdot 73 = 4096$

$\sqrt{D} = 64$

$x_{1,2} = \frac{82 \pm 64}{18}$ → $\frac{146}{18} = \frac{73}{9}$ ✗, 1

Zk.: $x_1 = 1$

$L = 2\sqrt{1-1}+\sqrt{1+3} = 2$

$P = 2$

$x_2 = \frac{73}{9}$

$L = 2\cdot\sqrt{\frac{64}{9}}+\sqrt{\frac{100}{9}} =$

$= \frac{16}{3}+\frac{10}{3} = \frac{26}{3} =$

$P = 2 \quad L \neq P$

12. $\sqrt{x+6} = 2 - \sqrt{4+2x}$ $|^2$

$x+6 = 4 - 4\sqrt{4+2x} + 4 + 2x$

$4\sqrt{4+2x} = 2 + x$

$16(4+2x) = 4 + 4x + x^2$

$0 = x^2 - 28x - 60$

$0 = (x-30)(x+2)$

$x_1 = 30$

$x_2 = -2$

(-2)

$x_1 = 30$

Ük: $L = \sqrt{36} = 6$

$P = 2 - \sqrt{4+60} = 2 - 8 = -6$

$L \neq P$

$x_2 = -2$

$L = \sqrt{4} = 2$

$P = 2 - \sqrt{4-4} = 2$

$L = P$

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

$\sqrt{1-2x} = 3 - \sqrt{x+4}$ $|^2$

$1 - 2x = 9 - 6\sqrt{x+4} + x + 4$

$6\sqrt{x+4} = 12 + 3x$

$2\sqrt{x+4} = 4 + x$ $|^2$

$4(x+4) = 16 + 8x + x^2$

$4x + 16 = 16 + 8x + x^2$

$0 = x^2 + 4x$

$0 = x(x+4)$

$x_1 = 0 \quad x_2 = -4$

(0,4)

$x_1 = -4$

Ük: $L = \sqrt{-4+4} + \sqrt{1+8} = 0 + 3$

$P = 3$

$L = P$

$x_2 = 0$

$L = \sqrt{4} + \sqrt{1-0} = 2 + 1 = 3$

$P = 3 \quad L = P$

14. $\sqrt{2-x} = 3 - \sqrt{x+3}$ $|^2$

$2 - x = 9 - 6\sqrt{x+3} + x + 3$

$6\sqrt{x+3} = 10 + 2x$

$3\sqrt{x+3} = 5 + x$ $|^2$

$9(x+3) = 25 + 10x + x^2$

$0 = x^2 + x - 2$

$0 = (x+2)(x-1)$

$x_1 = -2$

$x_2 = 1$

(1,-2)

Ük: $x_1 = -2$

$L = \sqrt{2+2} = \sqrt{4} = 2$

$P = 3 - \sqrt{-2+3} = 3 - 1 = 2$

$L = P$

$x_2 = 1$

$L = \sqrt{2-1} = 1$

$P = 3 - \sqrt{1+3} = 3 - 2 = 1$ $L = P$

15. $\sqrt{5+x}+\sqrt{5-x}=10$ $/^2$ (ϕ)

$5+x+2\sqrt{25-x^2}+5-x=100$

$2\sqrt{25-x^2}=90$

$\sqrt{25-x^2}=45$

$25-x^2=2025$

$0=x^2+2000$

$\emptyset$

16. $x+\sqrt{x^2-9}=21$ $\left(\frac{75}{7}\right)$

$\sqrt{x^2-9}=21-x$ $/^2$

$x^2-9=441-42x+x^2$

$42x=450$

$x=\frac{450}{42}=\frac{75}{7}$

$L=\frac{75}{7}+\sqrt{\frac{5625-441}{49}}=\frac{75}{7}+\sqrt{\frac{5184}{49}}=$

$=\frac{75}{7}+\frac{72}{7}=\frac{147}{7}=21$

$P=21$

$L=P$

17. $\sqrt{x+3}+\sqrt{x+4}=\sqrt{5}$ $/^2$ $\left(-\frac{11}{5}\right)$

$x+3+2\sqrt{x^2+7x+12}+x+4=5$

$2\sqrt{x^2+7x+12}=-2-2x$

$\sqrt{x^2+7x+12}=-1-x$ $/^2$

$x^2+7x+12=1+2x+x^2$

$5x=-11$

$x=-\frac{11}{5}$

Ku.:

$L=\sqrt{-\frac{11}{5}+\frac{15}{5}}+\sqrt{-\frac{11}{5}+\frac{20}{5}}=$

$=2\sqrt{\frac{1}{5}}+3\sqrt{\frac{1}{5}}=$

$=5\cdot\frac{1}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}=\sqrt{5}$

$P=\sqrt{5}$

$L=P$

18. $\sqrt{-x} = 2 - \sqrt{2-x}$ $/^2$

$-x = 4 - 4\sqrt{2-x} + 2 - x$

$4\sqrt{2-x} = 6$

$2\sqrt{2-x} = 3$ $/^2$

$4(2-x) = 9$

$8 - 4x = 9$

$-1 = 4x$

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

$\left(-\frac{1}{4}\right)$

Izk: $L = \sqrt{\frac{1}{4}} = \frac{1}{2}$

$P = 2 - \sqrt{2 + \frac{1}{4}} = 2 - \sqrt{\frac{9}{4}} =$

$= 2 - \frac{3}{2} = \frac{1}{2}$ $L = P$

19. $\sqrt{x+3} + \sqrt{x+1} = 0$

$\sqrt{x+3} = -\sqrt{x+1}$ $/^2$

$x + 3 = x + 1$

$3 = 1$

$\emptyset$

(ϕ)

20. $\sqrt{2x+6} - \sqrt{x+1} = 2$

$\sqrt{2x+6} = 2 + \sqrt{x+1}$ $/^2$

$2x + 6 = 4 + 4\sqrt{x+1} + x + 1$

$x + 1 = 4\sqrt{x+1}$ $/^2$

$x^2 + 2x + 1 = 16(x+1)$

$x^2 - 14x - 15 = 0$

$(x - 15)(x + 1) = 0$

$x_1 = -1$ $x_2 = 15$

(-1,15)

Izk: $x_1 = -1$

$L = \sqrt{2 + 6} - \sqrt{-1 + 1} = 2$

$P = 2$

$x_2 = 15$

$L = \sqrt{30 + 6} - \sqrt{15 + 1} = 6 - 4 = 2$

$P = 2$ $L = P$

21. $\sqrt{x+2}+\sqrt{x-2}=\sqrt{2x+3}$ $/^2$

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

$2\sqrt{x^2-4}=3\ /^2$

$4(x^2-4)=9$

$4x^2-25=0$

$(2x+5)(2x-5)=0$

$x_1=-\frac{5}{2}\quad x_2=\frac{5}{2}$

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

Za: $x_1=\frac{5}{2}$

$L=\sqrt{\frac{9}{2}}+\sqrt{\frac{1}{2}}=\frac{3}{\sqrt{2}}+\frac{1}{\sqrt{2}}=\frac{4}{\sqrt{2}}=2\sqrt{2}$

$P=\sqrt{16}=\frac{4}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=2\sqrt{2}\quad L=P$

$x_2=-\frac{5}{2}$

$L=\sqrt{-\frac{5}{2}+\frac{4}{2}}$ ∅

22. $\sqrt{x+9}-\sqrt{x+2}=1$

$\sqrt{x+9}=1+\sqrt{x+2}\ /^2$

$x+9=1+2\sqrt{x+2}+x+2$

$6=2\sqrt{x+2}$

$3=\sqrt{x+2}\ /^2$

$9=x+2$

$x=7$

(7)

Za: $L=\sqrt{7+9}-\sqrt{7+2}=4-3=1$

$P=1\quad L=P$

23. $\sqrt{x+1}+\sqrt{2x+3}=5$

$\sqrt{2x+3}=5-\sqrt{x+1}\ /^2$

$2x+3=25-10\sqrt{x+1}+x+1$

$x+3=26-10\sqrt{x+1}$

$10\sqrt{x+1}=23-x\ /^2$

$100(x+1)=529-46x+x^2$

$0=x^2-146x+429$

$D=19600$

$\sqrt{D}=140$

(3)

$x_{1,2}=\frac{146\pm140}{2}=\begin{cases}3\\143\end{cases}$

Za: $x=143$

$L=\sqrt{144}+\sqrt{289}=12+17=29$

$P=5\quad L\neq P$

$x=3$

$L=\sqrt{4}+\sqrt{9}=2+3=5$

$P=5\quad L=P$

24. $\sqrt{x+3}+\sqrt{3x-2}=7$ (6)

$\sqrt{3x-2}=7-\sqrt{x+3}$

$3x-2=49-14\sqrt{x+3}+x+3$

$2x-54=-14\sqrt{x+3}$

$14\sqrt{x+3}=54-2x$

$7\sqrt{x+3}=27-x\ |^2$

$49(x+3)=729-54x+x^2$

$0=x^2-103x+582$

$D=8281 \quad \sqrt{D}=91$

$x_{12}=\frac{103\pm 91}{2}=\begin{cases}97\\6\end{cases}$

Kl: $x_1=6$

$L=\sqrt{6+3}+\sqrt{18-2}=3+4=7$

$P=7$

$x_2=97$

$L=\sqrt{100}+\sqrt{284}=10+17$

$=27$

$P=7 \quad L\neq P$

25. $\sqrt{x}+\sqrt{x-3}=\sqrt{3(x-1)}\ |^2$ (4)

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

$2\sqrt{x^2-3x}=x\ |^2$

$4(x^2-3x)=x^2$

$4x^2-12x=x^2$

$3x^2=12x$

$x^2-4x=0$

$x(x-4)=0$

$x_1=0 \quad x_2=4$

Kl: $x=4$

$L=\sqrt{4}+\sqrt{4-3}=2+1=3$

$P=\sqrt{3(4-1)}=\sqrt{3\cdot 3}=3$

$L=P$

$x=0$

$L=\sqrt{0}+\sqrt{0-3}$ ∅

26. $\sqrt{3x+4}+\sqrt{x-4}=2\sqrt{x}$ (4)

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

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

$4\sqrt{x^2-4x}=2x-8$

$2\sqrt{x^2-4x}=x-4\ |^2$

$4(x^2-4x)=x^2-8x+16$

$4x^2-16x=x^2-8x+16$

$3x^2-8x-16=0$

$D=64+12\cdot 16=256$

$\sqrt{D}=16$

$x_{12}=\frac{8\pm 16}{6}=\begin{cases}4\\-\frac{4}{3}\end{cases}$

Kl: $L=\sqrt{12+4}+\sqrt{4-4}=4$

$P=2\sqrt{4}=4 \quad L=P$

27. $\sqrt{x-2}+\sqrt{4-x}=\sqrt{6-x}$ $\left(\frac{12}{5},4\right)$

$x-2+2\sqrt{(x-2)(4-x)}+4-x=6-x$

$2\sqrt{4x-8-x^2+2x}+2=6-x$

$2\sqrt{6x-x^2-8}=4-x \quad /^2$

$4(6x-x^2-8)=16-8x+x^2$

$24x-4x^2-32=16-8x+x^2$

$5x^2-32x+48=0$

$D=64 \quad \sqrt{D}=8$

$x_{1,2}=\frac{32\pm 8}{10}=\begin{cases}4\\ \frac{12}{5}\end{cases}$

Vn: $x=4$

$L=\sqrt{4-2}+\sqrt{4-4}=\sqrt{2}$

$P=\sqrt{6-4}=\sqrt{2} \quad L=P$

$x=\frac{12}{5}$

$L=\sqrt{\frac{12}{5}-\frac{10}{5}}+\sqrt{4-\frac{12}{5}}=\sqrt{\frac{2}{5}}-\sqrt{\frac{8}{5}}=$

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

$P=\sqrt{\frac{30}{5}-\frac{12}{5}}=\sqrt{\frac{18}{5}}=3\sqrt{\frac{2}{5}} \quad L\neq P$

28. $\sqrt{x+5}+\sqrt{2x-7}=2\sqrt{x}$ (4)

$\sqrt{2x-7}=2\sqrt{x}-\sqrt{x+5} \quad /^2$

$2x-7=4x-4\sqrt{x(x+5)}+x+5$

$4\sqrt{x^2+5x}=3x+12 \quad /^2$

$16(x^2+5x)=9x^2+\cancel{192}x+144$

$7x^2+80x-144=0$

$D=\cancel{8464}\ 4096 \quad \sqrt{D}=64$

$x_{1,2}=\frac{-80\pm 64}{14}=\begin{cases}+4\\ -\frac{72}{14}=\cancel{-\frac{36}{7}}\end{cases}$

Vn: $x=+4$

$L=\sqrt{4+5}+\sqrt{8-7}=\cancel{0}$

$=3+1=4$

$P=\sqrt{4}=4 \quad L=P$

29. $\sqrt{x+1}+\sqrt{x-1}=\sqrt{3x-1}$ (1)

$x+1+2\sqrt{x^2-1}+x-1=3x-1$

$2\sqrt{x^2-1}=x-1 \quad /^2$

$4(x^2-1)=x^2-2x+1$

$3x^2+2x-5=0$

$D=4+60=64 \quad \sqrt{D}=8$

$x_{1,2}=\frac{-2\pm 8}{6}=\begin{cases}-\frac{10}{6}\\ 1\end{cases}$

$x=1$

Vn: $L=\sqrt{2}+\sqrt{0}=\sqrt{2}$

$P=\sqrt{3-1}=\sqrt{2}$

$L=P$

30. $\sqrt{x+1}+\sqrt{x+2}=\sqrt{4x+5}$ (-1)

$x+1+2\sqrt{(x+1)(x+2)}+x+2=4x+5$

$2\sqrt{x^2+3x+2}=2x+2 \;/:2$

$\sqrt{x^2+3x+2}=x+1 \;/^2$

$x^2+3x+2=x^2+2x+1$

$x=-1$

Zk: $L=\sqrt{-1+1}+\sqrt{-1+2}=$

$=1$

$P=\sqrt{-4+5}=1$

$L=P$

31. $\sqrt{3x+1}+\sqrt{x+4}=\sqrt{9-x}$ (0)

$\sqrt{3x+1}=\sqrt{9-x}-\sqrt{x+4} \;/^2$

$3x+1=9-x-2\sqrt{(9-x)(x+4)}+x+4$

$3x-12=-2\sqrt{9x+36-x^2-4x} \;/^2$

$9x^2-72x+144=4(9x+36-x^2-4x)$

$13x^2-92x=0$

$x(13x-92)=0$

$x_1=0 \quad x_2=\frac{92}{13}$

Zk: $x=0$

$L=\sqrt{1}+\sqrt{4}=1+2=3$

$P=\sqrt{9}=3 \quad L=P$

$x=\frac{92}{13}$

$L=\sqrt{\frac{2779}{13}}+\sqrt{\frac{144}{13}}=$

$\doteq 14{,}67+3{,}32\doteq 18$

$P=\sqrt{9-\frac{92}{13}}\doteq 1{,}38 \quad L\neq P$

32. $\sqrt{2x+3}+\sqrt{x+13}=\sqrt{3x+40} \;/^2$ (3)

$2x+3+2\sqrt{(2x+3)(x+13)}+x+13=3x+40$

$2\sqrt{2x^2+26x+3x+39}=24$

$\sqrt{2x^2+29x+39}=12 \;/^2$

$2x^2+29x+39=144$

$2x^2+29x-105=0$

$D=1681 \quad \sqrt{D}=41$

$x_{1,2}=\frac{-29\pm 41}{4}=\begin{cases}3\\ -\frac{35}{2}\end{cases}$ kaže se pod $\sqrt{}$

Zk.

$L=\sqrt{2\cdot 3+3}+\sqrt{3+13}=$

$=3+4=7$

$P=\sqrt{3\cdot 3+40}=\sqrt{49}=7$

$L=P$

33. $\sqrt{7-\sqrt{x-3}}=2 \quad /^2$

$7-\sqrt{x-3}=4$

$3=\sqrt{x-3} \quad /^2$

$9=x-3$

$x=12$

(12)

Ili: $L=\sqrt{7-\sqrt{12-3}}=\sqrt{7-3}=2$

$P=2$

$L=P$

34. $\sqrt{x+1}-1=\sqrt{x-\sqrt{x+8}} \quad /^2$

$x+1-2\sqrt{x+1}+1=x-\sqrt{x+8}$

$2-2\sqrt{x+1}=-\sqrt{x+8} \quad /^2$

$4-8\sqrt{x+1}+4(x+1)=x+8$

$3x=8\sqrt{x+1} \quad /^2$

$9x^2=64(x+1)$

$9x^2-64x-64=0$

$D=6400 \qquad \sqrt{D}=80$

$x_{1,2}=\frac{64\pm 80}{18}=\begin{cases}\frac{144}{18}=8\\ -\frac{16}{18}=-\frac{8}{9}\end{cases}$ zajem pod $\sqrt{}$

(9)

Ili: $x=8$

$L=\sqrt{8+1}-1=3-1=2$

$P=\sqrt{8-\sqrt{16}}=\sqrt{8-4}=2$

$L=P$

35. $\sqrt{\frac{x+1}{x-1}}-\sqrt{\frac{x-1}{x+1}}=\frac{3}{2} \quad /^2$ $\left(\frac{5}{3}\right)$

$\frac{x+1}{x-1}-2\sqrt{\frac{x+1}{x-1}\cdot\frac{x-1}{x+1}}+\frac{x-1}{x+1}=\frac{9}{4} \quad / \cdot 4(x+1)(x-1)$

$4(x+1)^2-2(x^2-1)\cdot 4+4(x-1)^2=9(x^2-1)$

$4(x^2+2x+1)-8x^2+8+4(x^2-2x+1)=9x^2-9$

$4x^2+8x+4-8x^2+8+4x^2-8x+4=9x^2-9$

$0=9x^2-25$

$0=(3x+5)(3x-5)$

$x_1=\frac{5}{3}$ ~~$x_2=-\frac{5}{3}$~~

záp. pod √

Zk:

$L=\sqrt{\frac{\frac{5}{3}+1}{\frac{5}{3}-1}}-\sqrt{\frac{\frac{5}{3}-1}{\frac{5}{3}+1}}=2-\frac{1}{2}=\frac{3}{2}$

$P=\frac{3}{2}$ $L=P$