HẰNG ĐẲNG THỨC SỐ 8 VÀ VẬN DỤNG.

1) $\sqrt{11-2\sqrt{10}}=\sqrt{10-2\sqrt{10}+1}=\sqrt{\left(\sqrt{10}-1\right)^2}=\left|\sqrt{10}-1\right|=\sqrt{10}-1.$

2) $\sqrt{9-2\sqrt{14}}=\sqrt{7-2\sqrt{7}.\sqrt{2}+2}=\sqrt{\left(\sqrt{7}-\sqrt{2}\right)^2}=\left|\sqrt{7}-\sqrt{2}\right|=\sqrt{7}-\sqrt{2}.$

3) $\sqrt{4-2\sqrt{3}}=\sqrt{3}-1.$

4) $\sqrt{11+6\sqrt{2}}=3+\sqrt{2}.$

5) $\sqrt{27-10\sqrt{2}}=5-\sqrt{2}.$

6) $\sqrt{7-2\sqrt{10}}=\sqrt{5}-\sqrt{2}.$

7) $\sqrt{15-2\sqrt{14}}=\sqrt{14}-1.$

8) $\sqrt{3-2\sqrt{2}}=\sqrt{2}-1.$

9) $\sqrt{4+2\sqrt{3}}=\sqrt{3}+1.$

10) $\sqrt{5+2\sqrt{6}}=\sqrt{\frac{10+4\sqrt{6}}{2}}=\sqrt{\frac{6+2.2\sqrt{6}+4}{2}}=\sqrt{\frac{\left(\sqrt{6}+2\right)^2}{2}}=\frac{\sqrt{6}+2}{\sqrt{2}}=\sqrt{3}+\sqrt{2}.$

11) $\sqrt{7-2\sqrt{6}}=\sqrt{6}-1.$

12) $\sqrt{14-2\sqrt{13}}=\sqrt{13}-1.$

13) $\sqrt{9+4\sqrt{5}}=\sqrt{5}+2.$

14) $\sqrt{12+6\sqrt{3}}=\sqrt{3.\left(4+2\sqrt{3}\right)}=\sqrt{3}.\left(\sqrt{3}+1\right)=3+\sqrt{3}.$

15) $\sqrt{18-6\sqrt{5}}=\sqrt{3.\left(6-2\sqrt{5}\right)}=\sqrt{3}.\left(\sqrt{5}-1\right)=\sqrt{15}-\sqrt{3}.$

16) $\sqrt{21+4\sqrt{5}}=\sqrt{20+2.2\sqrt{5}.1+1}=2\sqrt{5}+1.$

17) $\sqrt{28-6\sqrt{3}}=\sqrt{27-2.3\sqrt{3}.1+1}=3\sqrt{3}-1.$

18) $\sqrt{15-10\sqrt{2}}=\sqrt{5\left(3-2\sqrt{2}\right)}=\sqrt{5}.\left(\sqrt{2}-1\right)=\sqrt{10}-\sqrt{5}.$

19) $\sqrt{46-6\sqrt{5}}=\sqrt{45-2.3\sqrt{5}.1+1}=3\sqrt{5}-1.$

20) $\sqrt{6-\sqrt{20}}=\sqrt{6-2\sqrt{5}}=\sqrt{5}-1.$

21) $\sqrt{8+\sqrt{28}}=\sqrt{8+2\sqrt{7}}=\sqrt{7}+1.$

22) $\sqrt{12-\sqrt{44}}=\sqrt{12-2\sqrt{11}}=\sqrt{11}-1.$

23) $\sqrt{5-\sqrt{24}}=\sqrt{5-2\sqrt{6}}=\sqrt{3}-\sqrt{2}.$

24) $\sqrt{8-\sqrt{60}}=\sqrt{8-2\sqrt{15}}=\sqrt{5}-\sqrt{3}.$

25) $\sqrt{7+\sqrt{48}}=\sqrt{7+4\sqrt{3}}=\sqrt{3}+2.$

26) $\sqrt{9+\sqrt{56}}=\sqrt{7+2.\sqrt{7}.\sqrt{2}+2}=\sqrt{7}+\sqrt{2}.$

27) $\sqrt{7+\sqrt{24}}=\sqrt{7+2\sqrt{6}}=\sqrt{6}+1.$

28) $\sqrt{3-\sqrt{5}}=\sqrt{\frac{6-2\sqrt{5}}{2}}=\frac{\sqrt{5}-1}{\sqrt{2}}=\frac{\sqrt{10}-\sqrt{2}}{2}.$

29) $\sqrt{4+\sqrt{7}}=\sqrt{\frac{8+2\sqrt{7}}{2}}=\frac{\sqrt{7}+1}{\sqrt{2}}=\frac{\sqrt{14}+\sqrt{2}}{2}.$

30) $\sqrt{5+\sqrt{21}}=\sqrt{\frac{10+2\sqrt{21}}{2}}=\sqrt{\frac{7+2.\sqrt{7}.\sqrt{3}+3}{2}}=\frac{\sqrt{7}+\sqrt{3}}{\sqrt{2}}=\frac{\sqrt{14}+\sqrt{6}}{2}.$

31) $\sqrt{6-\sqrt{35}}=\sqrt{\frac{12-2\sqrt{35}}{2}}=\sqrt{\frac{7-2\sqrt{7}.\sqrt{5}+5}{2}}=\frac{\sqrt{7}+\sqrt{5}}{\sqrt{2}}=\frac{\sqrt{14}+\sqrt{10}}{2}$

32) $\sqrt{7+\sqrt{40}}=\sqrt{7+2.\sqrt{5}.\sqrt{2}}=\sqrt{5}+\sqrt{2}.$

33) $\sqrt{8+\sqrt{15}}=\sqrt{\frac{16+2\sqrt{15}}{2}}=\frac{\sqrt{15}+1}{\sqrt{2}}=\frac{\sqrt{30}+\sqrt{2}}{2}.$

34) $\sqrt{9-\sqrt{77}}=\sqrt{\frac{18-2\sqrt{11}.\sqrt{7}}{2}}=\frac{\sqrt{11}-\sqrt{7}}{\sqrt{2}}=\frac{\sqrt{22}-\sqrt{14}}{2}.$

35) $\sqrt{10+\sqrt{99}}=\sqrt{\frac{20+2\sqrt{11}.\sqrt{9}}{2}}=\frac{\sqrt{11}+\sqrt{9}}{\sqrt{2}}=\frac{\sqrt{22}+\sqrt{18}}{2}.$

1) $\sqrt{x-1-2\sqrt{x-2}}=\sqrt{(x-2)-2\sqrt{x-2}.1+1}=\sqrt{\left(\sqrt{x-2}-1\right)^2}=\left|\sqrt{x-2}-1\right|=\begin{cases}\sqrt{x-2}-1, x\ge 3\\ 1-\sqrt{x-2}, x<3\end{cases}.$

2) $\sqrt{x+1+2\sqrt{x}}=\sqrt{x+2\sqrt{x}+1}=\sqrt{\left(\sqrt{x}+1\right)^2}=\left|\sqrt{x}+1\right|=\sqrt{x}+1.$

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

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

5) $\sqrt{2x-1-2\sqrt{2(x-1)}}=\sqrt{2x-2-2\sqrt{2x-2}+1}=\sqrt{\left(\sqrt{2x-2}-1\right)^2}=\left|\sqrt{2x-2}-1\right|=\begin{cases}\sqrt{2x-2}-1, x\ge \dfrac{3}{2}\\ 1-\sqrt{2x-2}, x<\dfrac{3}{2}\end{cases}.$

6) $\sqrt{2x+1+2\sqrt{2x}}=\sqrt{2x+2\sqrt{2x}+1}=\sqrt{\left(\sqrt{2x}+1\right)^2}=\sqrt{2x}+1.$

7) $\sqrt{2x-5-2\sqrt{(x-2)(x-3)}}=\sqrt{(x-2)-2\sqrt{(x-2)(x-3)}+(x-3)}$

$=\sqrt{\left(\sqrt{x-2}-\sqrt{x-3}\right)^2}=\sqrt{x-2}-\sqrt{x-3}.$

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

$=\sqrt{\left(\sqrt{x+2}+\sqrt{x-3}\right)^2}=\sqrt{x+2}+\sqrt{x-3}.$

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

10) $\sqrt{2x-1-2\sqrt{x^2-x-2}}=\sqrt{2x-1-2\sqrt{(x+1)(x-2)}}=\sqrt{x+1}-\sqrt{x-2}.$

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

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