Harder Algebraic Equations

Patrons are asked to solve the following equations. Be careful to check that your solutions work in the original equation since there is a danger that in squaring both sides of the equation you have introduced *fictitious solutions*.

1. $\sqrt{x+2}+\sqrt{x-1}=3$. $\boxed{x=2}$
2. $\sqrt{x+1}-\sqrt{x-2}=1$. $\boxed{x=3}$
3. $\sqrt{x+25}-\sqrt{x-23}=1$. $\boxed{x=144}$
4. $2\sqrt{x+2}+\sqrt{x+2}=9$. $\boxed{x=7}$
5. $\sqrt{x+9}-\sqrt{32-x}=-1$. $\boxed{x=7}$
6. $\sqrt{2x+1}-\sqrt{x-3}=2$. $\boxed{x=4 \text{ or } x=12}$
7. $\sqrt{x-1}+\sqrt{3x+1}=6$. $\boxed{x=5}$
8. $\sqrt{3x-2}-\sqrt{x+3}=1$. $\boxed{x=6}$
9. $\sqrt{x+2}+\sqrt{2x+2}=7$. $\boxed{x=7}$
10. $\sqrt{x-1}+\sqrt{x+7}+4=0$. $\boxed{\text{No solutions}}$
11. $\sqrt{2x+15}+\sqrt{4x+29}=12$. $\boxed{x=5}$
12. $\sqrt{2x+2}+\sqrt{x-1}=10$. $\boxed{x=17}$
13. $\sqrt{8x+1}+\sqrt{12x+1}=20$. $\boxed{x=10}$
14. $\sqrt{x+8}+\sqrt{2x}=-8$. $\boxed{\text{No solutions}}$
15. $\sqrt{2x+2}+\sqrt{x-3}=6$. $\boxed{x=7}$