1) Solve \( x = \sqrt{6x + 7} \)

\[
x = \sqrt{6x + 7} \Rightarrow x^2 = 6x + 7 \Rightarrow x^2 - 6x - 7 = 0 \Rightarrow (x - 7)(x + 1) = 0 \Rightarrow x = 7, x = -1
\]

However, -1 is an extraneous solution and so \( x = 7 \) is the only solution.

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

\[
\sqrt{x - 4} = 5 - \sqrt{x + 1} \Rightarrow \left( \sqrt{x - 4} \right)^2 = \left( 5 - \sqrt{x + 1} \right)^2 \Rightarrow
\]
\[
x - 4 = 25 - 10\sqrt{x + 1} + (x + 1) \Rightarrow -4 = 26 - 10\sqrt{x + 1} \Rightarrow
\]
\[
0 = 30 - 10\sqrt{x + 1} \Rightarrow 10\sqrt{x + 1} = 30 \Rightarrow
\]
\[
100(x + 1) = 900 \Rightarrow x + 1 = 9 \Rightarrow x = 8
\]