Problem 1. (10pt) Solve the equation $2(4^{2x}) = 8$ using logarithms.

Problem 2. (10pt) Solve the equation $6(9^{x-1}) = 5$ using logarithms.

Problem 3. (10pt) Solve the equation $\log_2(x + 5) = 4$.

Problem 4. (10pt) Solve the equation $\log_{10}(x+2) + \log_{10}(x+5) = 1$. Be sure to check that all your solutions are valid.