Graphing Systems of Equations

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Instructions: For each system of equations below:

1. Graph both equations on the same coordinate plane

2. Find the point of intersection

3. Verify your solution by checking it in both equations

Problem 1: Solve by graphing:

$$y = 2x + 1$$
$$y = -x + 4$$

Problem 2: Solve by graphing:

$$y = \frac{1}{2}x + 3$$
$$y = x - 1$$

Problem 3: Solve by graphing:

$$2x + y = 4$$
$$x - y = 5$$

Problem 4: A movie theater charges $8 for adult tickets and $5 for child tickets. On one night, they sold a total of 200 tickets and collected $1,400. Graph the system of equations and find how many adult and child tickets were sold.

Hint: Let x = number of adult tickets and y = number of child tickets

$$x + y = 200$$
$$8x + 5y = 1400$$

Challenge: For Problem 4, explain how you know your answer makes sense in the context of the problem. What would an impossible solution look like?