Notes 3.1 Graphing to solve systems

Change both equations to slope-intercept form: $y = mx + b$.
Graph each equation using the m and b.

To determine the number of solutions:
Find m_1 and m_2, if they are different then there is one solutions

If m_1 and m_2, are equal then find b_1 and b_2.

If b_1 and b_2 are also equal then you have the same line and get "Infinite Solutions".

If b_1 and b_2 are <u>not</u> also equal then you have parallel lines and get "No Solution".

Notes 3.2 Using Elimination to solve systems

Step 1:
Write each equation in standard form.
Step 2:
Get one variable in each equation as opposites multiplying one or both equations by numbers if necessary.
Step 3:
Add the two equations together canceling out one variable.
Step 4:
Solve for the remaining variable.
Step 5:
Substitute the answer back into either original equation and solve for the other variable.

To determine the number of solutions:
While doing "Step 3" if both variables cancel out then,

If the statement is "True" then you have the same line and get "Infinite Solutions".

If the statement is "False" then you have parallel lines and get "No Solution".

If both variables do not cancel out then you have one solution and continue to step 4.

Notes 3.3 Using Substitution to solve systems

Step 1:
Solve for one variable in one equation and substitute what it equals into the second equation.
Step 2:
Solve the second equation and substitute what it equals back into either original equation.
Step 3:
Solve again and you have both the x and y.

To determine the number of solutions:
While solving on "Step 2" if they variable cancel out leaving just numbers then,

If the statement is "True" then you have the same line and get "Infinite Solutions".

If the statement is "False" then you have parallel lines and get "No Solution".

If the variable does not cancel out then you have one solution and continue to step 3.