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| **Part 1 – Systems of Linear Equations** |
| Graph the following equations. Draw your graph on the screen at the right.*y* = –2*x**y* = *x* + 3 *y* = 5 |  |
| Find the intersection points of each vertex of the triangle formed. Press yr [calc] and select **Intersect** to find the intersection points. Make sure to select the correct equations each time using the } and † keys accordingly. Label each equation and each intersection point on the graph above. |
| **1.** Identify the systems of equations and their solution(s).System 1:  Solution(s): \_\_\_\_\_\_System 2:  Solution(s): \_\_\_\_\_\_System 3:  Solution(s): \_\_\_\_\_\_**2.** Can the point (2, 5) be a solution to the system ? Explain your reasoning.**3.** Where is the point (0, 4) in relation to the triangle? Is this point a solution to any of the three systems? Explain your reasoning.**4.** How many solutions does each system listed in Problem 1 have?**5.** Are any of the intersection points solutions to the system of equations ? |

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| **Part 2 – System of Linear Inequalities** |
| Change the symbol (to the left of **Y1**, **Y2**, and **Y3**) to  or (by pressing Í) for each equation until the darkest shaded region forms a triangle.This will change the equations to inequalities with ≤ or ≥ symbols. |  |
| Draw your modified graph of the inequalities on the screen at the right. Label each equation and each intersection point. |  |
| Use the Home Screen to test each vertex in each inequality. The first entry at the right shows storing the *x*- and *y*‑coordinates of the first vertex. The second entry tests the point in the inequality. The calculator returns **1** if the inequality is **true** and **0** if the inequality is **false**. |  |
| **6.** How many of the vertices of the triangle are solutions to the system?**7.** Test points inside the triangle as well. How many solutions are there to the system?**8.** If the inequalities of the system were changed to < and >, how many of the vertices would be solutions?**9.** What differences in the solutions did you find between systems of linear equations representing a triangle and a system of linear inequalities representing a triangle? |