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| In this activity, you will write linear equations with restricted domains to model fencing around a herd of sheep, then map out the fencing using the TI-Innovator Rover. | |

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| Note the location of your sheep on the coordinate grid shown at right.  1. Sketch a fence around your sheep that meets the following conditions:   * The fencing begins at (0,0). * The fencing is made of four linear functions with restricted domains. * The four pieces of fencing are connected to form a polygon. * The fencing ends at (0,0). | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |

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| 2. Write linear functions in the form *y* = *mx* + *b* for each of the four sections of fencing. Note the restricted domain for each function, as well.   |  |  |  | | --- | --- | --- | | **Fence Section** | **Linear Function in the Form *y* = *mx* + *b*** | **Restricted Domain** | | 1 |  | ≤ *x* ≤ | | 2 |  | ≤ *x* ≤ | | 3 |  | ≤ *x* ≤ | | 4 |  | ≤ *x* ≤ | |
| 3. Position the Rover at the origin of the coordinate plane facing toward the positive *x*-axis. Run the ***Corralling the Sheep*** program on your calculator connected to the TI-Innovator Rover. When prompted, enter your four linear equations and domain restrictions into the Rover. Record your observations below. |

**Extension:** Fence in the sheep using the least amount of fencing. Your fence still needs to meet the criteria outlined in problem 1 above. How do you know you’ve used the least amount of fencing? How much fencing is needed?