College Algebra Fundamentals

Section P-3 (Part 4): Graphs of Equations

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**:

* Students will be able to determine whether a graph is symmetric with respect to the y-axis, x-axis, or origin.
* Students will be able to use intercepts and symmetry as sketching aids.

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| **Main Idea** | **Notes** |
| **Vocabulary:**  **Vocabulary:**  **Classwork/**  **Homework:**  **Vocabulary:**  **Example 3: Using Intercepts and Symmetry to Sketch Graphs**  **Example 3 (Continued): Using Intercepts and Symmetry to Sketch Graphs**  **Example 4: Using Intercepts and Symmetry to Sketch Graphs**  **Example 4 (Continued): Using Intercepts and Symmetry to Sketch Graphs**  **Classwork/**  **Homework:** | A graph is *symmetric with respect to the y-axis* if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Draw a graph that has y-axis symmetry.  http://s3.amazonaws.com/edcanvas-uploads/117591/local/1380306229/coordinate-plane1-1005x1024.png  A graph is *symmetric with respect to the x-axis* if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Draw a graph that has x-axis symmetry.  http://s3.amazonaws.com/edcanvas-uploads/117591/local/1380306229/coordinate-plane1-1005x1024.png  A graph is *symmetric with respect to the origin*  if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Draw a graph that has origin symmetry.  http://s3.amazonaws.com/edcanvas-uploads/117591/local/1380306229/coordinate-plane1-1005x1024.png  Summary: Tests for Symmetry:   1. The graph of an equation is symmetric with respect to the **y-axis** if   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. The graph of an equation is symmetric with respect to the **x-axis** if   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. The graph of an equation is symmetric with respect to the **origin** if   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  How can knowing the symmetry of a graph before attempting to sketch it be helpful?  Use intercepts and symmetry to sketch the graph of x - y² = 1.  y-intercepts:  x-intercepts:  Symmetry:  y-axis?  x-axis?  Origin?  Now, using symmetry, we can find solution points above the x-axis and then reflect them to get the graph.   |  |  | | --- | --- | | x | y | |  | 0 | |  | 1 | |  | 2 | |  | 3 |       Use intercepts and symmetry to sketch the graph of y = |x – 1|  y-intercepts:  x-intercepts:  Symmetry:  y-axis?  x-axis?  Origin?  Now, find some additional points to help graph   |  |  | | --- | --- | | x | y | | -2 |  | | -1 |  | | 0 |  | | 1 |  | | 2 |  | | 3 |  | | 4 |  | |
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