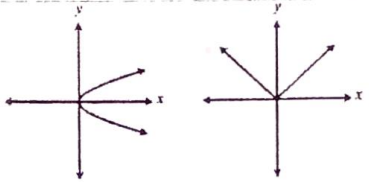
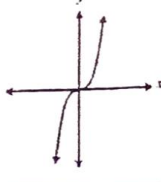
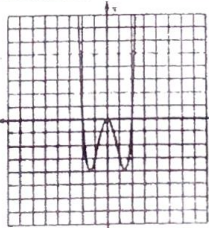
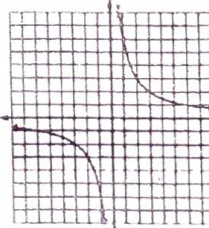


Name: _____

Date: _____

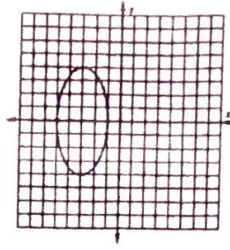
Topic: _____

Class: _____

Main Ideas/Questions	Notes/Examples													
<h2 style="text-align: center;">TYPES OF SYMMETRY</h2>	<p>The graph can be folded along a line so that the two halves match.</p>	<p>The graph remains unchanged when rotated 180° about a point.</p>												
	<div style="display: flex; justify-content: space-around;">  </div> <p>The _____ and _____ are common lines of symmetry. The _____ is a common point of symmetry.</p>													
<h2 style="text-align: center;">TESTS FOR SYMMETRY</h2>	<p>The following graphical and algebraic tests can be used to determine if the graph of a relation is symmetric to the x-axis, y-axis, and/or origin.</p>													
	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 50%;">Graphical Test</th> <th style="width: 40%;">Algebraic Test</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: middle;">x-axis</td> <td>For every point (x, y) on the graph, the point _____ is also on the graph.</td> <td style="text-align: center;">Replacing _____ with _____ results in equivalent equations.</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">y-axis</td> <td>For every point (x, y) on the graph, the point _____ is also on the graph.</td> <td>Replacing _____ with _____ results in equivalent equations.</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">origin</td> <td>For every point (x, y) on the graph, the point _____ is also on the graph.</td> <td>Replacing _____ with _____ AND _____ with _____ results in equivalent equations.</td> </tr> </tbody> </table>		Graphical Test	Algebraic Test	x-axis	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ results in equivalent equations.	y-axis	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ results in equivalent equations.	origin	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ AND _____ with _____ results in equivalent equations.	
		Graphical Test	Algebraic Test											
	x-axis	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ results in equivalent equations.											
y-axis	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ results in equivalent equations.												
origin	For every point (x, y) on the graph, the point _____ is also on the graph.	Replacing _____ with _____ AND _____ with _____ results in equivalent equations.												
<p><i>Examples</i></p>	<p>Directions: Use the graph to determine if the relation is symmetrical to the x-axis, y-axis, and/or origin. Confirm your answer algebraically.</p>													
	<p>1. $y = x^4 - 4x^2$</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <input type="checkbox"/> y-axis <input type="checkbox"/> origin <input type="checkbox"/> none </div>  </div>	<p>2. $xy = 6$</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <input type="checkbox"/> y-axis <input type="checkbox"/> origin <input type="checkbox"/> none </div>  </div>												

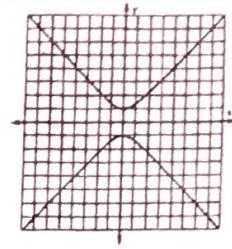
3. $4(x+3)^2 + y^2 = 16$

- y-axis
- origin
- none



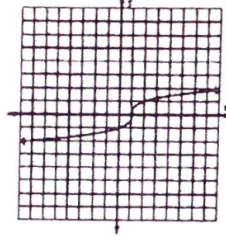
4. $y^2 - x^2 = 1$

- y-axis
- origin
- none



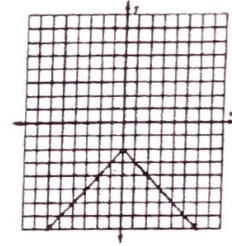
5. $y = \sqrt[3]{x-1}$

- y-axis
- origin
- none



6. $y = -|x| - 2$

- y-axis
- origin
- none



EVEN AND ODD
Functions

A function is _____ if it is symmetric with respect to the _____.

Algebraic Check:

A function is _____ if it is symmetric with respect to the _____.

Algebraic Check:

Examples

Directions: Determine algebraically if the function is even, odd, or neither. If even or odd, describe the symmetry.

7. $f(x) = x^3 - x$

8. $f(x) = -x^2 + 6$

9. $f(x) = x^3 - x^2 - 2x$

10. $f(x) = \sqrt{x^2 - 4}$

11. $f(x) = \frac{-8}{x}$

12. $f(x) = x + 1$